Battle on Mercury

By ERIK VAN LHIN

A SCIENCE FICTION NOVEL

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Life in a Dome

Mercury is an unpleasant little world. Long after men have learned to live on Mars and Venus they will find it dangerous and nearly impossible on Mercury.

The planet is even smaller than Mars, and it circles around the sun at a distance of only 36,000,000 miles, just a little more than one-third as far out as Earth. That means that it receives about seven times as much light and heat as we do on Earth from the sun's radiation.

There is no air on Mercury to screen out even

part of this blazing fury. The light and heat we normally feel are only part of the energy it receives. There are ultraviolet rays so intense they would burn out unshielded eyes in minutes, and there are even X-rays and other savage radiation hitting the unprotected surface.

To make matters worse, Mercury always turns the same side toward the sun, just as the Moon does to the Earth. There is no night on this burning half of the planet and no chance to cool off. The temperature there rises to nearly eight hundred degrees Fahrenheit—hot enough to melt lead and tin!

On the cold side there is no day, and no light or heat are received. Here the temperature is so low that even the gasses of the air would be frozen solid. Mercury must have had some air once, but it has all drifted to this cold side and frozen, until none is left on the rest of the planet.

But between the two sides there is a very narrow strip where men might first build domes to house a few people. Mercury wobbles a little as it circles the sun each eighty-eight days. Because of this, the twilight belt, as the zone between hot and cold sides is called, tilts gradually toward the sun and then away. It is as if the sun just rose over the horizon and then sank again, giving a day and night cycle equal to one circling of the planet around the suii. Here the temperature would be neither too hot nor too cold for life, though men could never live outside their little domes or spacesuits. It would still be a forbidding, uncomfortable place.

No life as we know it could exist on Mercury. The extremes of temperature and the lack of air would make this impossible. But we cannot say that there is no life there. Probably none will be found. But life might take different forms. The very extreme of solar radiation would make it possible for life which could not exist on Earth, since it would provide a terrific amount of energy—and with sufficient energy less efficient forms of life could exist.

Creatures made of silicones might develop near the twilight belt. The silicones are compounds of silicon, which are quite similar in many ways to the compounds of carbon that form the basis for our life. But unlike the carbon compounds, they can stand a temperature range of hundreds of degrees with very little change—which is why airplanes use silicone oils now in very hot or very cold climates. On Earth such life would be too sluggish and inefficient to compete with us, but Mercury could provide enough energy to make such creatures quite active.

Life might even find existence in forms which were not normal matter at all. We have accounts on Earth of fireballs—lightning, or electricity, which has taken spherical form and somehow doesn't break down easily. On Mercury, with its high energy and almost certain discharges of electricity from solar radiation, such things might be more common. We know very little about what life is, and we cannot say such things might not form a strange type of life. It could never do the things we can do— but then neither can we do what it would probably find easy. And given life, there is always the chance of intelligence evolving.

These creatures may be only possibilities. We don't know that they exist and can't know until we reach Mercury. But we have no way of knowing that some such forms of life do not inhabit Mercury, and all we can say is that they might.

Men, of course, can learn to live anywhere in time—because they carry their normal living conditions with them. The domes would hold back the heat and keep air around them. And ways could be found for men to move out into the hottest of the sunward side, if there was any reason for them to go there. The shipping and main centers would have to be at the twilight belt, but mining domes might stretch over the whole hot side of the planet.

Metals on Mercury would probably be different from those on Earth, since many would occur free instead of in ores. Lead and tin could be piped, since they would be liquid; but all kinds of other valuable metals must be available to encourage developing the planet. With the domes and suits heavily insulated, men would work the mines, though they might need some kind of robot machines for the heaviest work.

It would be a strange life in these little domes, and a lonely one. Each little colony would be cut off from the others most of the time, since radio waves would normally reach only to the horizon; they would have no air to carry them all around the planet. And even when radio was possible, the terrific static from the near-by sun would make reception very difficult.

Consequently, it would be a dangerous life. If anything went wrong and men were cut off from their supplies, they would be helplessly stranded in a world that seems designed to make human life almost impossible.

But men have faced danger before, and nothing has ever kept the human race back forever. Men will come to Mercury in the future, to build their domes, work their mines, and even to have families. This is an attempt to show what might happen to one of those little mining domes during an emergency.

It is far in the future, of course—but probably not as far as we might think.

E. v. L.

Chapter 1 Blame Johnny Quicksilver

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There was no air in the tunnel, and the temperature was high, even for Mercury—a little over eight hundred degrees Fahrenheit. But the big mining robot had been built for work there, and it knew its business. Its four feet were planted firmly near the end of the little tunnel, and its big manlike body and featureless head were bent forward intently.

In its metal arms the heavy hose moved carefully, squirting out liquid lead mixed with sharp

crystals of quartz. On the surface above there was a whole lake of the stuff, which was made even hotter in a sun-mirror oven and pumped down under pressure. It cut through the softer material at the end of the tunnel, gradually freeing a big block of solid beryllium—the light, hard metal which could be found in a pure state only here.

Everything seemed to be going as it should. But there was a frown on Dick Rogers' face as he sat watching the robot through the darkened glass of his spacesuit helmet.

"Cut over to the left a little more," he said into the little radio in the suit.

The robot moved the hose a trifle. "More left," its answer came expressionlessly through the phones.

At seventeen, Dick was already fully grown—tall and thin, like all the men who grew up on a planet of low gravity, but with muscles already well hard- ened, as shown by the ease with which he wore the heavy metal and insulation of the suit. On Earth it would have weighed over four hundred pounds, but here Dick and the suit together came to no more than one hundred and sixty. It was still no easy job to move around in it for hours.

His face was narrow and sensitive, but his mouth was firm and there was determination in his slate- blue eyes, which stared out of a face tanned to nearly as dark a color as his black hair. There were no

pale faces under the hot sun of Mercury.

Now he nodded as the robot went on with its work. Maybe things were going to work out all right, after all. But he didn't believe it. He felt trouble coming. It had been one of those days when everything went wrong, and he couldn't believe his bad luck had run out yet.

Johnny Quicksilver had started it. Johnny was one of the native balls of pure electricity that somehow were alive. The spooks, or wispies—from will-o'-the-wisp—as they were called, had caused nothing but trouble for the miners, until they were finally chased from the domes. But Dick had found Johnny almost dying out in the hotlands and had revived him with electricity from a storage battery. Since then, Johnny had been something of a pet, and fairly well behaved.

This morning, though, Johnny had insisted on following Dick from the big dome across the mile of hotlands to the mine, acting very strangely. He'd finally disappeared, but by then Dick had been late, and had been thoroughly bawled out for it. As punishment, he'd been taken out of the pumping department, ordered into a suit, and sent down to supervise this big mining robot. It was the dirtiest work in the mine, but he hadn't dared to complain.

Lately, everyone had seemed worried and nervous, and it was no time to kick about the job.

Besides, he was still on probation. When his father, who was head engineer of the mine, had let him begin working on his seventeenth birthday, the miners had claimed nobody who fooled around with spooks could be responsible. As a result, he was on trial for six months—and he'd been on the job only three weeks.

If he failed, he'd have to go back to tending the hydroponic tanks with the women and old men. Of course, someone had to take care of the plants that supplied most of their food and kept the air fresh and breathable—but Dick wanted to be an engineer, not a farmer! He'd spent most of his life fooling with machinery, and could think of no better way to spend the rest of it.

Suddenly the robot stopped. It shook its head from side to side, lumbered backward on its four feet, and dropped the hose. Then it stood frozen, making no further move.

Dick leaped for the hose before it could twist back at him. Under full pressure it was more than he could hold, but he managed to find the shut-ofF and stop the stream of lead. Then he swung to the robot.

"What's the trouble?"

"No trouble," the message came back over his radio. Sometimes the automatic testers in the big machines could locate the fault, but this had to be one of the cases where they didn't work, of course.

Dick snapped open the silicone plastic cover on the robot's chest and began testing it quickly. There was power enough in its batteries. He began snapping the little levers in the proper testing sequence, but everything seemed to be in order. Still, the robot refused to work.

Dick gave up after a final inspection. There was nothing to do now but report it and wait—and that meant he wouldn't get credit for loosening the big chunk of beryllium before quitting time. It might even mean having to stay late while he helped the repair crew with the robot.

Dick tuned the dial on the front of his suit to the general call band. "Dick Rogers, tunnel 3-MO," he reported. "Robot out of order. No sign of trouble, but it won't work."

"Okay, Dick," his father's voice answered in the phones. "I'm coming down in a few minutes, anyhow. Wait around. Hows the cutting?"

"Almost done, Dad," Dick reported. "Another hour should finish it."

The older man's voice sounded worried—much more worried than it should have been because of a routine delay such as this. But his words were normal enough. "Okay. Maybe we can get it going. I'll be there in twenty minutes."

There was nothing more for Dick to do. He dropped back on his stool and began to eat his lunch. Eating was a complicated business. Food was stored inside the suit, but he had to work for it. He wriggled his arms carefully out of the bulging sleeves and reached into the supply compartment built over his chest. He had just enough room where the helmet met the neck of the suit for him to reach his mouth. It took practice, but he managed.

Then he reached for the heavily insulated plastic box of his personal belongings, where he kept an engineering text he was studying. The book was actually a device that projected words from a film onto a tiny screen, and would work in the heat of the tunnel. Dick's fingers threw up the cover of the box—and stopped. Lying inside the box was a tiny, blue-white ball of fire!

It snapped out before he could jerk his hand back, and leaped into the air, five feet away. Suddenly it swelled out into a globe about two feet in diameter, like a ball of lightning, speckled with little swirling patterns. Johnny Quicksilver hung in the air, dancing up and down busily.

Somehow he must have pulled himself into the tiny globe form in which he seemed to sleep and had slipped into the box when Dick had thought he was already gone. Now he was inside the mine, the one place where he had no business to be.

Johnny was pure electricity, somehow alive and held together in a way nobody could understand. The wispies had been all over the hotlands when men first reached Mercury. They absorbed energy from the blazing fury of the sun and moved about by tiny discharges of electricity. Men paid no attention to them at first, but they began to creep into the machines and suck electricity from batteries and wires, frequently short-circuiting a machine and ruining it.

Normally, nothing could hurt them except coming in contact with grounded metal, which sometimes would completely drain away their energy. But the miners had taken to wearing ion blasters. These discharged a stream of atoms which had been stripped of their electrons and given a positive charge—and were pure poison to the spooks. The creatures had been chased out of the domes, and things had settled down to a quiet war, each side seeming to hate the other, until Dick had tried to tame Johnny.

“Johnny,” Dick yelled at him. “Johnny, do you want to be killed? Get back in that box before someone sees you. And don’t start any funny business here, or Til have to shoot you myself. Get back, now!”

Dick wasn’t sure whether the creature got his words over the radio or read his mind telepathically.

But he knew it could understand some of what he said.

Johnny paid no attention. He began darting toward the end of the tunnel, then back to Dick, trying to tease him to follow. It was the same trick he’d tried that morning, but this was no time for playing games. Dick’s father would be along soon— and that would be the end of Johnny!

Johnny suddenly seemed to tire of the game, just as Dick moved toward him with the box. He cut his size in half and darted up the tunnel, to disappear. Dick started after him and then slumped back. He couldn’t catch the wispy now; all he could hope was that Johnny

was tame enough to let the machinery alone.

Then he remembered his father was coming, and groaned. If Johnny came back while the older man was here, it would be tragic. And with the robot out of order, his father might be here for at least an hour. Somehow Dick would have to get the robot working—maybe in time to keep his father from coming down at all.

Dick finally gave up the testing tricks and began to go over the robot inch by inch, while the minutes rolled by slowly. It seemed hopeless. Then he grunted. On one of the eye lenses there was a tiny speck of lead, hardly the size of a period. He flicked it off with his finger—the robot moved forward,

picked up the hose, and began working stolidly again, just as Bart Rogers came down the tunnel.

The older man was rounder of face than Dick, and heavier, but the resemblance was close. He nodded as he saw the robot go back to work. “Nice work, kid. What was wrong?”

Dick told him quickly, and his father nodded, but the worry never left his face. “Fine. Must have thrown off the machines sight a little, but not enough to show up on the meters. Sometimes these robots act almost intelligent, but mostly they make a good dog look like a genius beside them.” He dismissed it, and swung to face Dick sharply. “Dick!”

Dick didn’t like the sound of it, but he tried to respond normally. “Yes, sir?”

“Dick, I just got a call over emergency circuit- one of the men thinks he saw a spook! If it’s yours, you’d better get it back before it wrecks anything.

I didn’t mind your fooling with your pet out in the hotlands, but you know better than to bring one in here! They’re dangerous, and you know it!” “But Johnny wouldn’t. . Dick began.

Then he stopped, following his father’s eyes. The big hose in the robot’s hands had gone limp, with only a few trickling drops falling from it. Abruptly the lights flickered and went out.

Dick cut on the torch in his helmet, just as his father switched over to the emergency band. He flipped the tuning dial on his chest in time to hear the last of a report coming in.

. . pumps and lighting motors are shorted. The spook only took

a sideswipe at them, though. Fused the main leads. We can get it fixed in an hour or so, maybe. Never saw a wispy act like that before-seemed to know what it was doing, and I didn't even have time to draw my blaster."

"Okay," Rogers' voice answered wearily. "Go ahead with repairs. Not that it matters much, I guess."

He snapped back to the private radio channel and jerked a thumb. Dick switched back at his signal.

At the first word, Dick knew that it was the Chief Engineer speaking to him, rather than his father.

"You can turn in your key at the locker room, Dick, and pick up your belongings," Rogers said without a sign of emotion. "You won't need them here. In fact, from now on, the mine's out of bounds for you. Take the rest of the week off, and start work in hydroponics Monday. That's all!"

He swung on his heel and started up the tunnel, his helmet torch cutting a thin slice of fight as he moved away. Dick dropped back onto the stool, swallowing painfully. He'd had it coming, he knew; but it didn't make it any easier to take. His throat ached and his eyes were burning. With a jerk, he cut off his helmet light and hunched over in the darkness, his shoulders heaving.

Blue-white light suddenly hit his eyes, and he looked up to see Johnny come darting down the tunnel. It stopped, then sped back, to return again, teasing him to follow.

"Johnny, you . . .!" Dick began thickly, but there were no words to fit his feelings. His hand jumped toward the blaster at his hip, and he yanked it out. Johnny immediately darted to the box, shrinking to a tiny ball, and began sliding through the plastic wall until he was gone from sight. Dick started forward. Then he dropped the gun slowly back into its holster! He couldn't even make himself shoot the little wispy, he thought bitterly. He was just a kid playing with pets, unable to act like a man. He didn't belong in the mines.

Half an hour later he stood outside in the glaring red, yellow, and brown of Mercury's surface. He looked back at the little dome that marked the entrance to the mine and again he swallowed thickly. It didn't look like much—just a half-sphere of silicone plastic, covered with a film of aluminum that was shiny bright here where no air could corrode it. It served to reflect most of the glare of the sun and also to keep out the wispies, since the metal film was grounded.

A mile away lay Sigma, the larger dome where they lived. It had been built over the first mine, until that vein had been exhausted. Then there had been talk of building a tunnel to the new mine, but nothing had come of it. Dick headed for the big dome and began walking slowly toward it. He might as well get used to it, since he'd be a farmer diere the rest of his life!

The cooling unit in his suit mumbled dully, and the air from his tank sighed slowly as he breathed. He wouldn't be any ordinary tank farmer, even— he'd be the black sheep of the whole dome, thanks to Johnny Quicksilver.

A heavier suit-sleeve reached over his shoulder and cut on his radio. "Not supposed to be out here without that on, Dick," his father said, as the older man fell into step beside him. "We're quitting for the day, and I've been calling you five minutes. Sore at me?"

Dick shook his head, not trusting his voice.

"I had a dog once, back on Earth," Rogers told him. "Crazy fool dog that got vicious when he was old. I got into plenty of trouble over him. Got your pet with you?"

"You're not going to shoot him, are you?" Dick asked quickly.

Rogers shook his head. "No—I don't want you feeling the way I felt when they shot my dog. Just get rid of him. And no more fooling with him, Dick. When a thing gets dangerous, it stops being a pet." Dick called uncertainly, but this time Johnny obeyed, slipping through the plastic and leaping out. The wispy bobbed up and down, and immediately began his teasing efforts to get Dick to chase him. The boy walked along numbly, until the spook finally gave up and went scooting off over the horizon at better than a thousand miles an hour.

"Good riddance," Rogers said. "He could have ruined the whole mine. We'll probably have to shut down, anyhow."

Dick jerked his eyes up to his father's. He'd known there was trouble, but nothing that bad. In his whole life the mines had never been shut down, except once when the sun broke out in a major storm that lashed Mercury with wild radiation. Then the miners had all been driven back to the twilight belt for safety. Four of the domes had been ruined permanently.

"Storm coming," his father confirmed his guess, looking up at the sun, where the flames leaped out from its surface and spots showed clearly on its face. "Might not be too bad, if we had supplies to

weather it out. But the supply rocket was due two days ago, and we don't know what happened to it. We're too short for an emergency, so I guess we'll have to close down in a couple of days, unless another rocket comes. Better not tell your mother about this."

It was the last sentence that told Dick how serious things really were. With supplies low and the dome subject to a first-rate solar storm . . .

"We'll make out," he said quickly. But seeing his fathers grim face, he wasn't so sure of it.

Chapter 2 New Life for Pete

Dick discovered the next morning that there was no use in not telling his mother. After all her " years on Mercury, she had guessed at once the reason for the worry of the miners. And it was impossible to hide the fact that the ship hadn't come with the supplies.

But Dick's younger sister, Ellen, was still running around happily, not worrying about anything as long as the school was closed. He came down late to find her all set for him.

"Dickie lost his job! Dickie lost his job!" Her voice was shrill, and she seemed to like it that way. "Dickie . .

Dick's mother had come up behind her. "All right, Ellen, I told you to behave. For that, you can wash the dishes *and* go to the store! Now get along with you. Dick, your breakfast's on the table."

But the damage was done. His mother sat with him, trying to conceal her worry and to pretend that everything was as it should be. But there was no way to make him forget all that had happened the day before.

Finally he got up, almost wishing he were starting at hydroponics that morning. At least it would give him something to do. With seven hundred people in the dome of Sigma, there was no chance that the news hadn't spread to everyone. He thought about applying early at the tank farm, but he did not want to see people yet.

Dick moped around another half-hour, until he finally began to feel that the little apartment was a trap, filled with his mother's worry and the sneering face of his sister. He picked up his spacesuit and went out through the door, trying to look as if he had important business.

It wasn't until he was halfway to the outer lock of the dome that he remembered Pete. Then his

steps quickened, and he began to forget the worst of his misery.

Pete was the first robot ever shipped to Sigma dome. He was an old-model robot, originally meant for housework on Earth, but converted to stand the heat here. His body was entirely of silicone plastic, which made him fairly light, but which also had proved too weak for the constant pressure at the mine. Finally, he'd been turned *over to* hydroponics, where he'd spent a great number of years. Eight months before, he'd failed for the last time. The repair crew admitted that they couldn't fix him, and that they didn't even understand some of his circuits, since he was such an old model.

Dick had found him in the discard and had rescued him. At his request, the robot had become his, to do with as he liked. For months he had spent his spare time working on it.

He put on his spacesuit at the lock and went out, being careful to let them know where he was going, so nobody would remind him that he couldn't go to the mine. Pete was stored in the "out" shed, where much of the repair work was done. It was a simple open pit, covered with a reflecting roof, built just outside the dome. There, without air, repair work of delicate machines was much easier. A vacuum tube could be opened and repaired, then the glass sealed again. And tricky soldering was easier where there was no oxygen to corrode the metal.

This morning there was no one else working there, and Dick was relieved by that. He was out of view of everyone, though the watchman sometimes wandered over to make sure no wispies were coming too close to the dome.

Pete lay as Dick had left him, with his whole chest off and the delicate wiring inside exposed. He looked like a complete mess, partly because his normal condition was almost human. Unlike the new mining robots, he had only two legs and could have been mistaken for a man at a distance.

Actually, Dick felt that Pete was almost repaired. There had been a few old books that helped, and Dick had been able to puzzle out most of the trouble with him. He had a natural flair for mechanics and electronics, and had begun to make sense of all the circuits. There hadn't been anything too badly wrong with the robot except that his insulation had begun to break down, and some of the little resistors were burned out.

Dick began working on Pete, delicately wiring in the new parts he had bought with his working money and trying to test the operation with a small meter. Nobody on Mercury had a private robot— and if he could take one home to his mother, she'd be the most envied woman on the planet. Besides, a robot would be as good a pet as Johnny Quicksilver.

There was a sudden burst of static in Dick's earphones as he thought of the creature, and he turned around to find the wispy at his shoulder, as if trying to see what he was doing. It may have been waiting for minutes or have just arrived. But Dick wondered for the hundredth time whether it could read his mind.

"Johnny, you've got to stay away ..Dick began. But a sudden glowing spot on the ground beyond interrupted him. He ducked quickly, while Johnny suddenly went scooting off. It had been an ion beam from a blaster, and that wasn't good medicine for men or spooks.

The watchman came thundering up and then gulped noisily into his radio. "Dick—I never saw you! Hey, did I crisp you? Saw a blamed wispy and took a shot at it! Uh, good thing I missed."

Dick got up furiously. Old Manny was getting too old for his post if he went around firing first and then looking. But the old man had already cut off his radio and was legging it around the dome, where Johnny had gone, his gun again making sharp bursts against the dome.

Johnny was back beside Dick, almost at once, dancing even more excitedly.

"Okay, have your fun," Dick told him. "Go ahead and play. You'll find it unhealthy around here now. After what you did yesterday, being my pet wont save you. They're after you!"

Johnny bobbed about and then began teasing again. But Dick turned his head away. He'd been disappointed in the wispy, who knew better than to tackle machinery. And he wasn't going to reward it by giving in to its ideas now. Johnny continued to try for a few minutes more, and then came over to rest disconsolately by Dick's shoulder and hover over the robot.

The job was nearly finished now. Dick had done all he could to it, and it should be in working order. It might not work quite as it had done when new of course, but it should be good enough. He screwed the plastic cover back on to its chest and threw in the power switch.

Johnny darted down against Pete, cautiously testing for metal which might be dangerously grounded. Finding none, he sank part way into Pete's chest and then rose up to the solid head of the robot, added for ornamental purposes only. Johnny seemed to like to work his way through anything that was a good insulator.

Pete twitched and squirmed. He bent his knees awkwardly, and suddenly doubled in the middle. A squawking sound came from his mouth, and his head twisted crazily. Johnny jumped out in apparent surprise and then back in quickly.

"Pete," Dick called over the radio, as quickly as he could set it to the robot frequency. "Pete, this is your new master, Dick. Stop that, and get up."

"Yes, master Dick," the robot answered dutifully.

Its speech had been the part that Dick had been most doubtful of, but obviously that worked properly. Yet the robot went on writhing and twisting. Then, very slowly, it began to get to its feet! Johnny had sunk entirely inside it now, and Dick had a strong suspicion that the trouble was coming from him.

"Come out of there, Johnny. If you ruin Pete, 111 turn you over to the watchman," he warned.

Johnny slipped out. As he left the robot's body, Pete suddenly straightened and turned about firmly. He faced Dick, and waited, the picture of the proper behavior of a house robot.

Johnny obviously had been doing things to Pete, but he hadn't harmed the robot, Dick decided. Maybe this was fun to the wispy. He could probably trigger the little relays inside the robot with his own electrical energy, and make the body move about in ways that Pete's not-too-intelligent mind couldn't stop.

"Go to sleep, Pete," Dick said. The old robots had a device for cutting off their limited thinking, just as a man might sleep, but still leaving their bodies ready for emergencies.

Almost instantly, Johnny darted back into Pete s body, until he was completely invisible.

This time Pete wobbled only a little. He took two steps away from Dick, turned again, and began beckoning with one hand. As the action became smoother, it took on a note of real urgency.

In spite of himself, Dick was impressed. The wispy had been acting

oddly for two days now— but this motion was unmistakable, if it meant what it would mean from a normal robot. “Something important, Johnny?” he asked doubtfully.

The robot head nodded quickly and emphatically. Again the gesture to follow was repeated.

Dick considered it doubtfully. There were legends that the wispies sometimes had led a prospector to a good strike, but there were other stories of how they lured a man out into the hotlands where others of their own kind could fall on him. Dick was pretty sure that Johnny liked him—but still . . .

Dick swayed doubtfully, until the robot apparently got tired of waiting—or Johnny inside him did. The black silicone body turned more surely this time and began walking away. After a few feet it started off at a run.

Dick jumped out after it. “Johnny, come back here! Don’t you go running off with my robot. Come back here!”

In answer, there was a glow around the robot's head, as if Johnny had let himself swell up a little and project outside. But the feet moved on, even faster.

Dick gave in. “Okay, you will-o’-the-wisp, if I agree to come with you, will you wait for me?”

It seemed to be the right idea. Almost instantly, the glow disappeared, and the robot stopped, waiting until Dick could catch up with it. Then, at a more sedate speed, just fast enough to keep Dick working hard to follow, it turned out across the hotlands.

This was a fine business, Dick decided. If his father knew what he was doing, he would really catch it. Yet he couldn’t let all his months of work on the robot go to waste. And Johnny was driving it along just out of his reach, where there was no chance of his reaching the little shut-off lever.

He glanced down at his air supply and figured carefully. He had a full day’s ration on him. If the robot didn’t go too far, no harm would be done. And his suit was made with a metal outer covering, down to his feet, which were solidly on the ground. He wouldn’t be in too much trouble from other wispies, at least. But he didn’t like the idea of having to walk half a day, and maybe turn around then to go back without the robot. He wished he could trust Johnny better.

They came to a big pool of liquid bronze—lead and tin mixed. Immediately the robot turned aside and began skirting around it, though the depth couldn't have been too great for it. Dick grunted in surprise. Johnny had learned a lot about people; he seemed to know that wading through the hot metal put too much of a strain on a man's cooling system, and was setting the path accordingly.

When he came right down to it, Dick had to admit that the wispy obviously knew a lot more about him than he did about it. And right now he could have used a little more knowledge. He was getting more worried with each step, now that the dome was lost to sight.

One more mile, he promised himself. Then, if Johnny wouldn't return the robot, he'd just have to forget it.

At the end of the mile, though, Johnny was closer than before, seeming at times to be within reach. Dick kept trying to surprise him, and to bound within reach of the power switch. Johnny managed to avoid him, each time, but it was close enough that Dick felt sure it was only a matter of time until the robot missed.

They came down a ravine of rocky stuff, where there was very little metal. Here Dick hesitated.

On that he'd be pretty well insulated, and it might be safe for spooks to attack him. He had his blaster with him, but if they ganged up on him, he wouldn't be able to take care of all of them quickly enough.

They were almost through, though, when another wispy appeared. It came hurtling from the north at full speed, jerking to a stop over the robot before Dick could draw his blaster. The glow spread out from Pete's head again, as Johnny came out of the shell. Dick hesitated, seeing no further sign of hostility, but not knowing what to expect.

For a second, the new wispy touched the edge of the glow that was Johnny. Then it jerked off north again. Johnny retreated into Pete, and the arm of the robot beckoned Dick along more com- pellingly than before. Pete's legs stepped along faster, too, trying to draw Dick to a higher speed.

He thought of a whole host of dangers, and yet he was curious. It might have been a wispy signaling that diere was to be an ambush for Dick further on. But it might have been anything else, just as easily. And the fact that he had been allowed to pass through the danger spot unharmed made Dick doubt that he had anything further to fear. Still, he couldn't go much further before it became wiser to return. He

still had more than enough air, but on Mercury it didn't pay to take chances.

Now Johnny was forcing the robot to go through places that were rougher than any he had tried

before, as if trying to save every second of time. The other wispy came back, darted down, as if reporting, and then went on its way elsewhere. Curiosity now had complete control of Dick.

He sensed that they were almost at their goal as soon as Petes legs suddenly increased speed, and the robot with its wispy passenger disappeared down into a hollow. Dick scrambled along, trying to get up to the top of the little pile of rocks that lay ahead.

Then he was where he could see. Down below, in a small rocky section, one of the prospecting tractors was stalled. It was caterpillar-treaded, and looked like a small dome on its tracks. With these, carrying air and supplies for weeks, the old prospectors who hunted new metal and ore strikes often went from dome to dome, or clear to the center of the hotlands. They could navigate almost anywhere, and carried tiny atomic motors that were good for months without replacements.

But this one had obviously got into trouble. It must have caught something in one of its tracks that had gradually worn away some of the links. Now it was tilted at an angle, with the track off and spread about, as if someone had tried to repair it, and failed. And there was an air of hopelessness about it.

Dick let out a useless yell, and ran down into the hollow. He knew the tractor—it was the battered old wreck of a prospector called Hotside Charlie. The old man had spent hours at a time telling Dick wild tales of the early days on Mercury when Dick had been a mere kid. He had seemed almost like an uncle to the boy, until he disappeared several years before on one of the long trips such men made.

Charlie had been on his way back, apparently. And his luck had run out. Dick fumbled for his radio and twisted it to the emergency band, but there was no answer from the tractor. Then he saw that there was a crack in the plastic shell of the tractor—a crack big enough to let all the air run out.

Pete had stopped beside the tractor and was trying to open the tiny airlock that led inside, but apparently Johnny hadn't yet learned how to control the fingers. The wispy suddenly leaped from the head of

the robot, leaving it standing motionless, and began dashing around the tractor in excited circles.

Dick found the handle of the lock, and threw it open. He dashed into it, threw open the inner door, and glanced about with a rising fear as he saw no sign of Charlie. For a moment, he gave up hope. Then his eyes dropped to the floor by the seat, and he saw a bulky spacesuit lying there, stretched out.

He was beside it at once. From inside, the face of Charlie stared out, as if the man were sleeping. Dick gasped, but his fears were groundless. At his touch, the old mans wrinkled face moved, and his eyes opened.

“Hi, Dick,” he said. “Air low. No power. Ain't dead yet though.”

The effort was too much, and he lapsed back into unconsciousness.

Chapter 3 Abandoned!

Hotside Charlie had no business regaining consciousness at all, Dick saw. With his air running out, the old man had cut down his oxygen flow to a bare trickle, hardly enough to maintain life, let alone consciousness. He had enough left for no more than three hours at the rate he was now using it, and a lot less than that if the flow were increased enough for him to become active.

And with no power for his cooling units, it was a wonder he could live at all. The shell of the tractor

still kept the radiation of the sun off him, of course; but if he were moved outside, he’d bake in half an hour.

Dick examined his own batteries hastily, and shook his head. Both were lower than he liked, and Pete’s batteries were an old style that wouldn’t fit. He took one of his own and plugged it into Charlie’s suit, nodding as the little motor there began to turn over briskly. But it left him with no more time than Charlie had. They had to get back to the dome in three hours, or Charlie would have no air at all left, and Dick would be without power. “Pete,” he called. “Wake up and come in here.” Without Johnny to control him, the robot seemed to work perfectly. It came into the tractor at once. Dick pointed to the old man, and stooped down to pick up his legs. “Grab the head, Pete. We have to carry him back to the dome. And Johnny!”

The wispy came at once, ducking through the open lock of the

tractor.

"Thanks for bringing me here, Johnny," Dick told him. The wispy had been trying long enough, and probably had even shorted the machinery in the mine to get Dick out and lead him here. But there was no time to think, even. "Now stay out of Pete, Johnny. He has work to do."

Apparently satisfied, the wispy settled about five feet above them and a hundred feet ahead, and began leading the way. Dick nodded, and decided to follow. Johnny had already proved that he could pick trail according to the needs of his human friend. It might save a few precious minutes.

With Pete carrying the heavier end, it was still a burden. And there was no time to waste. Dick settled into the fastest pace he could hope to keep steadily, and struck out blindly after Johnny, with Pete moving along behind him. He'd put the old man's legs on his shoulders, and Pete had to support the head even with that height. But apparently the robot was equal to the job.

It was a nightmare before they had covered a mile. The weight pressed down more with each step, and Pete's best efforts to keep in step and make the load easy were none too good. He had more intelligence than a mining robot, but he was a pretty sad imitation of a man.

At the end of an hour, there was no feeling left in Dick. Each step was a matter of picking up a leg and putting it down to a count that he kept as fast as he could, but he had long since stopped thinking of the distance ahead. He had to get old Charlie back, he had to get Charlie back, he had to get back!

It never entered his head to leave the old man. Either they'd all get through, or he'd drop outside with his burden.

He was almost unconscious at the end of the second hour, but the legs under him still moved on, following where Johnny led without thought. Then a voice spoke weakly in his phones.

"You're a fool, kid—a hot-lead fool. Put me down and go home. And tell 'em old Charlie died happy, just knowing they still grow men in those domes!" It snapped Dick out of his daze, cutting through the pain and the fog until he seemed suddenly to catch a second wind.

"Stop fighting yourself, Uncle Charlie," he told the old man. "You're wasting air. We'll all make it." And somehow, they did.

Johnny suddenly snapped up and jerked off toward the hotlands, and Dick looked up to see the dome of Sigma only five hundred feet away, with a group of men in spacesuits piling out of the lock. He dropped to his knees and felt himself crumpling down, with the load of Charlie on top of him. But now it felt good to give up.

When he came to, he was inside the dome, and on his own bed. Across the room, Hotside Charlie lay on the opened sofa from the living room. Dick's neck muscles lanced with a grabbing pain as he turned his head, but he managed to see that the old man was breathing. And for once, Dick's sister had no kid smart-aleckness on her face. She cried out as she saw he was conscious, and started for him. From the comer, Pete moved out quickly. "Master Dick rests," he said flatly.

Then others were in the room, but Dick's sight grew fuzzy, and he slipped back into unconsciousness. It didn't matter. He, Johnny, and Pete had done their job.

He felt almost normal the next day, and the doctor assured him that the aches and pains that were left from the long trip would disappear after he moved around a little. It wasn't entirely true, but he felt well enough to go down into the living room, where it seemed that half the population of Sigma had sat up through the night. They wanted all the details. There wasn't much he could tell them, and he kept it as short as he could, hoping they would leave.

His father cut through the babble of voices, shaking his head. "Looks like we were wrong about that pet of yours, Dick," he admitted. "He's been hanging around, and some of the men were trying to shoot him. I suppose we'll have to call them off now. We just thought he was following you, before. Sure you're not making that up to explain your running off into the hotlands without permission?"

He accepted Dick's denial, though most of the others obviously weren't convinced that Johnny could have meant well.

"Just crazy pranks. You can't tell about the

spooks," the chief of the repair gang said, "Besides, I don't go for that business of a spook controlling a robot. This Pete probably got some signal from Hotside Charlie. They're both fixed with old-time equipment. Took off after the signal, and the spook just went along, hoping to suck juice out of the robot. What I want to know is how Dick fixed that robot. We can use Pete at the shops and the farms, if he works right."

"He fixed him because he's a natural mechanic, which is more than I can say for some who don't believe his story," Dick's father told the man. "And you won't use him without Dick's permission. The boy was told he could have the robot, and that stands! Now all of you get out, and go back to work. We've still got trouble to take care of." There were mutters of agreement, and the worry came back to the faces. They all began to move out, arguing about whether anything could be true about Dick's story. He watched them leave with a mixed feeling of relief and anger.

"They don't believe me, do they?" he asked. His father grinned wryly. "No, they don't. And if your sister came back with a story like that, you wouldn't believe her. But I guess you're right, at that. A couple of us saw you coming back, just as we were leaving the mine, and your Johnny cer- ·, tainly looked as if he were leading you. Look, your

mother's got some food fixed up, if you feel like eating. I've got to get back to the mine, but we'll talk it all over later."

He left, and Dick went out to the kitchen, where his mother was fussing over some of his favorite foods. She started in by bawling him out for running off like that, and wound up by running her hands through his hair and telling him how Ellen had been crying all night until he came to.

He liked it, somehow, though he felt embarrassed. Then he tried to give Pete to her, but she refused.

"You're a good boy, Dick. And fm just as happy knowing you wanted to give him to me. But he's yours. Land sakes, I wouldn't know what to do with him. He's been driving me crazy, staring all the time. He tried to wash the dishes this morning—as if I'd let any piece of metal and electricity fool with my good Earth dishes. No, you keep him." Dick grinned, and began to feel like himself again. He'd never liked the repairman, who was a recent replacement from Earth for the man who'd done the work until a few years ago, but he decided Pete would be more useful in the tank farms, after all.

Then he remembered that he himself was going to have to be useful there, and life was back where it had been before. He shoved the food aside, and got up.

Being a hero for a day was fine, but it still didn't make up for having to be a tank farmer the rest of his life.

Charlie was still sleeping, but Dr. Holmes seemed to feel confident

that all was going to be right with the old man. “Just sleeping. He’s worn out, and his body is still full of poisons from all that heat and bad air, but he’ll be all right, Dick. How he lived is more than I can see.”

“Just wouldn’t die,” Dick guessed.

The doctor nodded. “That’s about it. Medicine has come a long ways since we used to take out adenoids and let people run around sick with colds all the days of their life. But it can’t do anything about some things; it takes a will to live. And these old prospectors have that. Well, I’m going. Let him sleep until he wakes up, and you’ll find him the same as ever.”

There was nothing for Dick to do except to discuss his trip with the people he met wherever he went. And that grew tiresome after a while. He put on his suit and went outside to look for Johnny, but the wispy had vanished. Apparently the men had scared him off for the time being.

“Nope,” the watchman told him, in answer to his questions. “Ain’t seen him and don’t want to, unless it’s through the sights of my blaster. Can’t trust them. Freaks, that’s what they are. Get you off guard, then try to come in and ruin the dome. I’m wise to them.”

Dick should have known better than to expect most of the miners to change their minds about Johnny. Even his father was only half convinced of Johnny’s good intentions. They were all much more interested in the fact that Pete was working again than in anything Johnny could do.

By evening most of the excitement had died down, and the trouble threatening the dome had replaced Dick’s adventure in everyone’s mind. The miners coming back were glum, unsure of whether they should go on working or not. There had still been no word of the missing rocket.

Bart Rogers admitted it openly, at supper. “No word,” he said. “I guess we can figure that something happened to it and that we’ll have to wait for the next one. Funny, though. You’d think they’d get worried when it didn’t come back and fly over to see how we’re doing.”

It had been puzzling Dick, too. He knew that radio reception from the main city in North Twilight, the main shipping center to the domes, was bad enough at best, and probably impossible now. But it didn’t explain everything.

A voice from the hall caught their attention, and they swung to see old Hotside Charlie standing there. He was still a little shaky, but his eyes were fully alive, and he seemed to be pretty much his old self. He'd obviously had Pete help him down the stairs, but now he shook off the robot and came forward, sinking into the chair Dick's father pointed out.

It was impossible to guess his age, though it must have been at least sixty. His hair had been speckled with gray ever since Dick had first seen him, and his grizzled beard hid much of his face. The deep tan and the network of wrinkles were more from Mercury's hot sun than from age. And his eyes were snapping and alert. Age had made no difference in his body—it was partly slouched normally, but that was habit. And there was neither fat nor traces of gauntness about him.

His clothes were shiny and old-fashioned, but they were as clean as they could be kept within a tractor. An old plastic jacket seemed to have been as ageless as he was. Under it, he wore a plain gray shirt, and a pair of black trousers of heavy material.

They had been quiet while he seated himself and began to help himself to the food. Now he chuckled with appreciation. "Best eating this side of heaven, Mizz Rogers. If I'd a been ten years younger, I'd have given that there husband of yours a real tough fight. You betchal"

Then his eyes became serious, as he turned to face Bart Rogers.

"You ain't going to hear from that rocket ship of yours, Bart. That's what I was a-coming to tell you. Came whooping along like a fool, didn't watch what was happening. Old treads, went to pieces in no time after I hit that rock. Cracked open the tank, spilled me out of my seat, and blew out my power pile. Then I had to get smart and try to fix it, instead of coming on afoot! Should have left me to get my dusting-off, Dick. Getting old, no use any more. Started seeing things, even—thought a blamed wispy was hanging around waiting for me to die/'

"Probably there was one there, according to what Dick saw," Rogers said. He knew that the old man would tell his story in his own way, but this time he cut back to the original subject. "You were coming to tell us about the rocket, Charlie?"

"Yeah. Sure was. High-tailing it along, fool enough to think the tractor could take that much speed. Your rocket ship cracked up

better'n a hundred miles from here, Bart. I saw it come down— dunno why, but I guess they had a young pilot who forgot to roll her over when the top got too hot."

He munched thoughtfully on some yeast and soya "steak," and shook his head before going on.

He'd gone at once to where the ship landed, but he'd been too late. The rocket had cracked up completely, and the atomic pile that should have powered the radio hadn't been working. Charlie had tried to get a signal out, but he didn't have power enough for the set in the rocket.

The supplies had all been ruined, since the ship had landed on its cargo holds, and they lay scattered over the surface, already burned beyond usefulness in the heat of the sun.

The pilot had been killed, of course. Charlie had done his best to give the proper burial, according to prospector custom—which meant finding a cavern big enough to hold the body and saying a few quick words over it. Then he'd gone back to search the ship and see if it belonged to Sigma dome, where his friends might need word of it.

"Found a piece of paper, too," he finished. "Orders. Figured it was important to you folks, so I came highballing along, trying to get it to you afore all the radio died in the storm that's coming up. Here."

He passed the charred, crumpled paper across, and Bart read it. He handed it to his wife, and then gave it to Dick.

Some of the words were missing, but there was enough to give the story. The rocket wasn't supposed to bring them more than a minimum of supplies, after all. It had been sent to take them to East Twilight, where they were to hole up with the men from other domes. The solar storm due was expected to be the worst in all the history of the domes, and none of the little cities in the hotlands would be able to stand it.

The men of Sigma dome would have to abandon it and get back to East Twilight at once. But without the rocket, there was no way to reach the larger settlement. It had been two days since the ship should have reached East Twilight, and no second ship had come for them, so there wasn't much chance of another rocket being sent.

Something had gone wrong, it seemed. And now they were abandoned, without supplies, to face the storm by themselves.

Chapter 4 No Answer from Twilight

It had been a busy night. The Council of Sigma had been called hastily, and had heard the story again from Charlie, this time surprisingly simple and direct in manner. Then the council of war had begun. There was little enough the miners could do, of course. But each had hoped that somehow somebody else would come up with an answer.

Dick had sat in on the council, since it was at his fathers home, and since Charlie had snorted

and bucked at the idea of excluding the boy. But he'd been as empty of ideas as any of them.

It had been his father who had proposed the weak solution that had finally been adopted. The mines, of course, would be closed at once, and Sigma would go on emergency rationing of everything. The chief need was for power, since the uranium slugs they were using in their atomic piles were all due for replacement and needed to have the waste products removed from them. There would be some power from the solar-oven, which could be converted to run one of the boilers and generators, but that would be only a slight help.

As soon as the decision was made, all useless fights were turned off —and that meant everything more than a single small bulb in each home. They couldn't cut power for the hydroponic tanks—that was needed if they were to have food and fresh air. But everything else would be kept to a minimum, and even the cooling units would be cut down, until the temperature rose to ninety.

But all that was only a half-measure. They still had to get word either to East Twilight where they were supposed to go or to North Twilight, from which the rocket had been sent. But that was a poor hope, and they knew it. The storm was already building up, creating so much static that radio transmission was almost impossible.

"There's still the ship," Rogers had said. "According to Charlie, it has been pretty badly battered up, but we might be able to get it working enough to reach East Twilight. Not with us aboard, but with one man who could tell them we need help."

The repairman, Snaith, protested. "How are we going to get to the rocket? You expect us to walk a hundred miles through the hotlands

and carry it back on our shoulders, Rogers?”

Charlie had taken as much dislike to the man as Dick, who felt that Snaith only repaired machines because he knew of nothing better to do, not because he really liked them. Now the old man snorted in disgust.

“Its been done, sonny. I mind a time when I was young and not such a fool I figgered I had to fool around with a busted tractor. 'Course, I didn't have my power all burned out, either. But I walked six hundred miles through the hotlands, pulling my supplies on a sled. Anyhow, the hot- lead fact is you only got to go out to my tractor. Fix that, and you don't have to walk.”

It had been the first suggestion that offered any hope, and the men seemed to feel that it should have been thought of before. But they were unused to thinking in terms of the tractors, since the domes had no need for such things. The plan was passed

at once, and Rogers, Dick and Charlie were selected to go out and fix it. Snaith had acted angry at the selection of Dick instead of himself, but the repairing of Pete by Dick, after he was junked, had convinced most of them that he would be better for the job.

Now the three were halfway to the tractor, this time with a rough sled containing repair parts, oxygen, tools, and fresh batteries, which Pete was pulling behind them. Charlie seemed to be as strong as ever, and kept up a continual stream of chatter about the surface around them.

Suddenly he paused and looked up. “Ret it's your pet spook, Dick,” he said. “Call him down, and let’s invite him along.”

Rogers frowned, and shook his head. “Better leave well enough alone, Charlie. Those batteries would make a nice meal for a wispy. I think Johnny may be friendly, but I don’t know how smart he is.”

Charlie grinned. “Trouble with you, Bart, is that you think living in the domes is living on Mercury. You should ask a prospector some time. We get around. We run into both kinds of spooks—the wispies and the demons. This one is a wispy, sure enough, hot-lead all the way through. Call him down, Dick.”

Dick put in a call, and Johnny came darting down, circling around at a safe distance until he seemed to decide that the other two men

were harmless. Then he set about hunting out the best road for them, seeming to make allowances for the sled behind them.

“Two kinds of spooks?” Dick asked Charlie, not sure that he had heard right.

“Two kinds, at least. Of course, not all us prospectors will tell you that. A lot of young fools came in after this planet got civilized. But you take it from a man who’s spent forty years a-chasing around, some of it back when nobody worried about spooks eating their power, because they didn't have that much fancy equipment. Some spooks are natural enemies. They'll eat electricity anywhere, and they don't care how they get it. Downright mean. Can’t trust 'em. But they ain’t all like that.”

He shook his head. “I mind me of a time when I was still green here. Thought I knew it all. Got out in the middle of the hotlands and got lost. ’S true, so help me. Got plumb lost. Sun overhead, and no way to tell east from west. Started out fine, but spent a whole day getting nowhere. Then I seen a spook a-following me. So I offered him a chance to show me the way and I’d give him all my spare batteries. Just a fool kid, a-talking like you might talk to a dog back on Earth. But he come down, quick as you please, and started jumping off one way, coming back, and doing it again. Took me along for three days, till I found I could find my own way. I paid him off, and we left each other to mind our own business.”

“I never heard of spooks being friendly,” Rogers said.

“How could you? You miners take a shot at every spook that comes along. Young squirts who come out now and call themselves prospectors, they do the same. Naturally, the spooks don’t go for that. They got men pegged as enemies now. The smart ones, that is. T’others don’t care.”

“Then Johnny isn’t like some of the others?” Dick asked.

“Nope. I never heard it, so maybe nobody else saw it. But I seen one of the demons, the mean spook-kind, get beaten and chased away when he tried to ruin me once. I’d been sort of carrying on a conversation, you might say, with a wispy that was following me, and the wispy really lit into that demon. You betcha. Demons don’t have much brains. They’re mean. They eat wispies, too, I heard. Tough on wispies, them demons. And men come along, a-taking over Mercury and killing off both kinds, not caring which is which. There used to be a lot more like Johnny when I was a young man.”

"That's all fine," Rogers told him, and Dick could see that his father was half convinced, but not willing to accept the old man's words as final proof. "But how do you tell a wispy from a demon?" "You don't, until he acts like a wispy," Charlie admitted.

"Then we have to shoot first. We can't take chances," Rogers reminded him. "One mistake could ruin a dome."

Charlie nodded glumly. "Yep. Guess you're right. Might be a good thing, too, get back the way things used to be. But I guess you can't do much different from what you do."

They had reached the tractor by then, and the three men fell to work at once. Pete was little help. He could carry things, but it was harder to tell him what to do than to go ahead and fix them. They sealed the crack first, making the dome airtight again, and coupled up the tanks of air. Dick's father went in to work on the little atomic pile; as an engineer, he knew how to do it without getting radiation bum, and Dick knew better than to fool with such things until he knew more theory. He came back after a few minutes to announce the trouble was simply a broken power line.

They coupled in the new batteries as he fixed it, and the cooling motors started at once. In a half-hour the dome of the tractor would be livable again. And with the power line fixed, the big driving motor could run.

The treads proved to be more trouble. Dick found that several of them had been scraped by a big hunk of something like carborundum. The dome had had no replacements for the treads, and Charlie had meant to buy a new track set when he next reached civilization, so he had none. Dick fussed and fumed over it as he began welding the broken bits together and trying to plate on hunks of steel to replace the worst worn spots. It was a fair job when he finished. The tractor might run for months, with luck—or it might hit something and go bad the next minute. He could only hope, as they worked the track back on its rollers.

But at last it was done, and they climbed inside the tractor, sending Pete back to Sigma dome with the sled. Johnny seemed to guess where they were going, and set out, hovering close to the tractor, but pointing die way.

It got rougher as they went along, but the repair job Dick had done seemed to stand up, and he began to breathe more easily. He had to admit to himself that he would have hated to try to go over this

section of Mercury on foot. Maybe Charlie had done so years before, but it wasn't something that could be done as a matter of course.

They were making good time now, averaging better than thirty miles an hour. The tractor could have gone faster, but Charlie was taking it easy this time.

Dick spotted the rocket when the old man pointed it out, and his heart sank. It had come down on its side and had smashed in whole sections of its hull. The cargo cases were all around, but there was no use examining them. The ground here was thinly coated with a layer of liquid lead, and the precious cases of new uranium rods would have been contaminated beyond any hope of salvaging them.

"Don't have to fix it too good," Charlie tried to comfort him. "So the hull leaks. Let it. Get a man in there in a spacesuit, and don't bother with the hull. All he's got to do is make East Twilight."

It was some help, but it didn't make repairing the damaged driving units any easier. Fortunately, the big rocket tubes hadn't been hurt. But automatic dumps had gone into effect at the impact. They were designed to keep the pile from reaching too high a level in an emergency, and they had thrown out some of the uranium that powered the motors. There wasn't enough left to get the machine into the space above the ground.

Dick's father had no idea of repairing it then. All he could do was to look it over and see whether there was any chance of getting it to work again, using whatever the dome could provide. He began taking inventory, and his frown was indication enough to Dick that it wasn't going to be easy.

"I don't know," he reported finally. "Some of the controls are pretty badly ruined. That might be all right, if we had one of the pilots who can fly a ship by the feel of it. But nobody in Sigma is more than an amateur. To get it up and keep it up is going to be a problem. Besides, we can't get enough power to make it work the way it should. If we get the main drive working enough to lift it and handle three of the steering tubes, we'll be lucky."

"Thought you could fix anything, Bart," Charlie protested. "You're an engineer, doggone it."

"But only a mining engineer, Charlie. I'm not a rocket expert. Only time I ever saw a rocket motor working was when I came here from Earth. Then we all had a brief look at it. I know the theory to some extent, and I can figure a lot of this out, but I can't guarantee any

results. How about you, Dick? Think you can fix the controls?"

Dick studied them, and shook his head. "Not in time, Dad. I never found a book on them, and I'd have to spend at least a month working over some of those things to get the feel of them in my head. That's the way I fixed Pete."

"Yeah." Rogers shrugged. "Wish I could have sent you back to Earth for a real engineering degree. Well, we don't have a month, so I'll have to do what I can."

He went down into the engine hold, to see what he could find, and came up looking unhappy about it. The list in his mitten had grown longer.

"We might as well go back to Sigma," he told them. "I think we can find everything we need, but I still don't know. But there's one chance, if it works at all. They've got a couple of the new super-power transistors in the radio here. With them in place of our old tubes, we might get out enough power to signal Twilight. If we can't—well, then we'll just have to see what we can do here."

He began yanking out the three-inch cubes that were the transistors —crystals that could amplify a signal. They had been used since the middle of the twentieth century, but had only been perfected to handle real power within the last ten years. "Why not use them here?" Dick asked. "Because the radio blew out on landing, and the only thing that isn't ruined by high voltage is this transistor hookup," his father told him. "Take a look!"

He had thrown back the cover of the set, and Dick took a glance inside. It was enough to see that his father had been right beyond any shadow of doubt.

Johnny was waiting outside the ship, and Charlie turned to Rogers quickly. "Power left in anything here?"

"Nothing he can damage," Rogers answered. "The air-conditioning batteries are still charged, but they're no good for anything else— another new model that won't fit. Charlie, sometimes I agree with you. Specialization can be carried too far." Charlie nodded emphatically. Then he grinned. "I don't worry about Dick's pet ruining things. He knows what will cause trouble and what won't, and you can bet he only jinxed your mine motors a little because he figured Dick had to find me—must have known about your rocket crashing. They are *smart:,* Bart. What I was a-thinking was that maybe he could use a square meal. He looks a mite peaked with all this

running after us."

For once Rogers laughed. Johnny looked like any other wispy, and they were all exactly alike, as far as men could see—any peakedness he felt would show only to others of his kind. But he dragged out two of the batteries. Johnny jumped for them, and there was a brief flash as he sucked out the energy in them. Then he went dancing ahead of them, and settled down to the job of guiding the tractor back to Sigma.

In the dome, Rogers and Dick wasted no time in reporting. It took half an hour to adjust the radio there to use the big transistors, and new power leads to carry enough current for them. Outside the littie radio shack, the whole city stood waiting, while Rogers himself wanned up the set and adjusted it to its highest efficiency.

He sat pounding on the key, which could send Morse code that went through static better than a voice communication. For two hours he kept it up, alternating between sending and listening. But all he got was static, and he finally left it to another man while the three went home and to bed.

In the morning they were awakened by wild cries. But it wasn't success. During the night a spook had somehow gotten into the dome. Probably the nerves and worry had made someone careless about one of the smaller locks. But in any event, it had then gotten into the radio shack and had managed to ruin all the important parts of the set in sucking out power. Nobody knew whether it had escaped or was still in the dome.

"It *wasn't* Johnny," Dick protested.

His father nodded, a little doubtfully. "Better keep him away, anyhow," he said unhappily.

"They'll shoot first and worry later. Besides, it doesn't matter."

Twilight hadn't answered—and now there would be no answer. Probably North Twilight thought that the rocket had already carried Sigma to East Twilight, and East Twilight thought the plans had been changed. Because of the solar storm, the two cities were almost certainly cut oif from each other now.

There would be no relief rocket. And the only hope now was to get the ruined ship repaired.

Chapter 5 Only Two Weeks

The emergency rations were cut still further. From now on, no power could be used in any of the homes, and the dome itself would be kept in a sort of half-bright condition. Fuel would have to be conserved to the limit.

To make matters worse, some of their precious supply of partly exhausted uranium slugs would have to be taken to the ship. They had debated over it for hours, while trying to make sure that every possible bit of uranium was taken that could

be spared, but Rogers was still uncertain as to whether it was enough. His final answer was the only possible one—-it had to be.

Men were busy making a thorough survey of the situation as Dick, Charlie and Rogers left, taking three other men with them, and carrying a load of supplies on a rough sled that had been rigged up behind the tractor. Meantime, the only two who knew anything about flying a rocket were busily comparing notes, trying to fill in on theory, and devouring the few scraps of information that were to be found in the dome. Neither felt confident of his ability as a pilot, but the one who seemed to know the most—after they had decided that—would take his chance.

The treads on the tractor had been gone over and put in better condition while the three slept, and now they churned along at a rapid pace, taking it easy only on the roughest sections where the sled might be hurt at too much speed.

Johnny hadn't appeared, and Dick was worried. He felt sure that the wispy had not been guilty of ruining the radio, but the sudden absence of his pet looked suspicious. On the other hand, he was hoping that the creature wouldn't show up. Two of the men were riding outside on the sled, and they would almost surely fire at the first sight of a wispy. They didn't care to hear about the difference between spooks of one kind and those of another. To them, a spook was a spook, and they had a score to settle, even beyond their usual hatred of the creatures.

It looked as if Johnny would stay away, Dick decided, and relaxed a little. Then the creature appeared, coming in from the north at full speed, and braking to an instant stop in front of the tractor.

"Spook!" the radio in the tractor said in a voice that belonged to one of the two men,

“Dick's pet,” Rogers answered over the set. “Take it easy. We don’t know he killed the radio, and he’s done us a few favors.”

“Don’t care, we haven’t time to fool around. Swing the tractor a bit, Bart, and give us a good shot at him!”

Charlie got up suddenly, and pulled his helmet down. He winked at Dick, then started out through the lock of the rapidly moving tractor, while Rogers went on driving it along at a steady clip. The old man appeared on the little ledge outside, and his blaster was in his hands.

“You men back there ain’t sitting pretty,” his voice came over the speaker. “Now if you want to *try* trading shots with me, why go right ahead. Only I’ve had it tried on me before, you betcha.

Or just take a shot at that wispy, and see what happens.”

“You wouldn’t kill us!”

“Nope! But I’d sure singe you till you wished I had finished the job. I don’t like guys that won’t pay a debt—and you wouldn’t be a-ridmg on this trip—which is the only hope you got, in case you’ve forgot—if it wasn’t for that wispy. He’s a friend of mine, boys. He sure is. I figger I sort of owe him about thirty years more life. And I don’t let my friends get hurt. Clear enough?”

They grumbled at him, but the old man stood his ground. Rogers smiled wryly, but didn’t interfere. At last the old prospector came back inside, after a final warning about what would happen if any trouble came to the wispy.

“When you believe in something, kid,” he told Dick, “don’t you never stop to wonder. You back it up! Brains are nice things to have, but they’s times when feelings count for more. You betcha. Okay, Bart, I’ll take over the driving now.”

They reached the ship without any trouble. Obviously, the men didn’t like the way Charlie had handled the situation, but they had a healthy respect for his ability, and they took it out only by grumbling among themselves. When they saw the job ahead of them, even that stopped. There was no time for carrying on a feud when the safety of the whole dome depended on their working together.

Rogers had to handle the refueling of the ship by himself, since it was again a matter of knowing how to take all necessary safety measures around atomic power. He went about it at once, with only occasional words to the men regarding the other work.

Dick had begun to work on the control system, trying to find some sense to it. He had recognized the impossibility of getting all the finer instruments to work, but he'd hoped that some of the automatic safety devices and piloting aids could be put into some kind of order. Now, as he dug into their complexities, he doubted it. They were badly damaged, partly by the force of the landing and partly by the wild surge of electricity that must have gone through them.

In many cases it was not just a matter of repairing the mess, but of having to substitute parts which they did not have.

He began to wonder whether even the best mechanic who knew the instruments inside and out could have done much with them.

Fortunately, the main steering devices were tougher. Some of them worked through motors, but the motors were on a different circuit and had not been damaged. Most of them still depended on the old combination of cables and hand power—probably because they were meant to work when everything else failed. Nowadays, most pilots never touched the older controls, but they had to be there for emergencies.

In the hands of a skilled pilot they would have been sufficient. But with rookies trying to guide the ship, it would have been a lot safer to leave some of the work up to the tiny mechanical brains that had been devised.

The steering tubes on one side had all been bent by the force of the landing. And there was no way to get around the need for them. Rogers had studied the situation, and finally told the others flatiy that they would have to be fixed in the most direct and most difficult manner.

Dick came out from his hasty work with the controls to find the rest of the men using their picks and digging instruments to work a passage under the ship, until they could get to the tubes. He picked up a pick and started forward, but his father's voice called him back.

"Leave that to men who've worked in the mines long enough to know how, Dick. I've got another problem for you."

It turned out to be equally nasty. The big rocket tube had landed where some of the liquid lead on the surface had run back into it. There, out of the direct radiation from the sun, it had cooled off just enough to turn solid again. Until that was removed, using the tube would have been pure suicide,

Dick groaned, but he knew his father was right. It had to be gotten out, and he was the best man for the job, since the others knew their work better than he would have known it.

It didn't matter if some of the lead at the outlet of the big rocket remained. But back where the hot gasses first came in, it had to be scraped off by hand, to give it a clear path. Once it had that, it would blow the rest of the lead out by itself.

He crawled back inside, barely able to squeeze in. The light on his helmet helped, but it glared off the round tube walls, and seemed to dazzle him as much as it illuminated the parts where he had to work.

To make matters worse, no tools had been brought along for such work, and there were none that served very well among the tools normally carried on the ship. He finally settled on a big section broken from one of the sharp shovels, together with a knife that Charlie dug up.

It was slow going, and his cramped position didn't help. The lead was soft enough to cut away, but it had to be scraped right down to the surface of the tube. And the roundness seemed to have been especially designed to make it impossible to get at all the lead.

Dick had to come out several times and give his cramped muscles a chance to relax. Each time, he saw that the men were having harder going with their digging. The lead ran down into the tunnel they were cutting, and they had to install a system of dams around the diggings in order to keep it from filling the hole faster than they could throw it out.

"Never mind," Rogers told them. "We counted on having tilings go wrong. When I told you we'd finish it today, I was thinking it could be done in three hours at the most. So we have time enough."

It was a somewhat cheering idea. But it didn't make the work any easier. Dick wondered how long it would have taken if they'd had to fit the ship to carry the village off to East Twilight, even if they had had sufficient supplies for the job. Weeks, he suspected. All they were trying to do was to get something off the ground that would stay off long enough to get to Twilight. That meant that they had to fix only the strongest and most basic parts of the ship—which naturally were less damaged than most of the rest of it.

He grimaced, as he realized it would probably be about as good a ship when they finished as men had used to reach the moon of Earth on their first flight into space. But conditions were different. Then the

men who flew it had been trained for long months, and had had all their plotting done for them before they left. This time, only luck and prayers would keep it up.

He finally finished the job as best he could, and his father inspected it carefully. It seemed to pass satisfactorily.

The men had finished the tunnel under the ship and were just cleaning up around the damaged tube as they came out. Dick watched them, trying to rest himself. But he wasn't finished, he found. His father signaled for him to follow, and they went down to inspect the damage.

It had been more than Rogers had counted on. The tube was totally useless.

For a second, they stood staring at it. Then Rogers shrugged. "Get some of the men to prying off one of the other steering assemblies—the one we won't be using," he ordered into his radio. "Dick, give me a hand in cleaning out this mess."

They chiseled the damaged tube assembly out of its fastenings, and lined up the holding devices as best they could. When the replacement came down to them, they found that it fitted an entirely different set of holes. More specialization. Dick was beginning to agree with Hotside Charlie. When two things served about the same function but in different places, they should still be made the same.

They drilled out the holes with their biggest drill, and then had to ream them bigger by hand, using whatever would fit. It was slow, backbreaking work. But at last the tube went into position, and they began screwing down the bolts.

It wouldn't do as a permanent job. More than an hour would probably loosen it. But with luck, it would be used for no more than a minute or so in the trip, since it had to be used only to correct the main steering mechanism. It should last.

"Okay," Rogers said at last. "That's all we can do now. We might as well go home and take a break. If the boys who are trying to be pilots are ready, we'll bring them back in the morning. We all need a good night's sleep, and so do they, probably."

Night, of course, was purely a matter of choice here, since Mercury always presented the same face to the sun. Here in the hotlands it was always noon. But men had grown up with night and day a part of their lives for untold generations, and they still kept the same

divisions that were natural on Earth. Repeated tests had proved that it was the most efficient way for them to work.

They drove back, each plagued by doubts, since all of them had seen some of the poorness of the makeshift repairs. One of the men looked up at Rogers. “How much chance do you figure, Bart?”

“About one chance in three, I'd guess—and I may be optimistic. I can figure on the troubles with the ship, but I can’t really guess how bad our pilots will be.”

It wasn’t cheerful, but it was obviously a better chance than they had thought. Dick suspected his father was making it sound like an honest statement, but still being optimistic to keep them from knowing how bad it must be.

Sigma was an unhappy place when they reached it and drove the tractor inside. The news that the ship was repaired helped to cheer them up for a few minutes, but it didn’t last long. During the day, most of them had discovered fust how little their chosen pilot knew about a ship.

It was Snaith, of all people, who had been given the job. He didn’t look too happy, though his worry seemed to be for the dome, and not just for himself.

“I was up with my brother a few times, and he was a pilot,” he told them. “I guess maybe I handled the controls two or three hours. But it was just a little private ship, a lot different from these big jobs. And then we took off from a tail position. I don’t know anything about taking off from the side, the way you say this ship is.”

The other man who had done a little piloting admitted that it was more than he had done. He’d relieved a friend at the steering of one of the ore- tugs, but had never made any kind of a landing or take-off.

Surprisingly, Charlie turned out to be an asset. He rubbed his bearded chin, and his eyes seemed to turn inward to examine his memory better. “Seems to me I’ve seen ’em take off from the side,” he said. “Used to have to in some places, where they couldn’t land on their tail, because the ground was so uneven. Nothing to it. You get her warmed up, and then you turn on your bottom steering rocket full. When she’s really roaring, you cut on the big tube. Takes you up fast, and you just have time to cut off the steering job. Rough work—but men have done it before.”

Snaith still didn’t look happy about it, but his face cleared up some.

“Okay, we’d better get together, and I’ll see what I can figure out from your memory. It may help—and we sure need help.”

They went off, while the committee that had been taking inventory came up. The faces of the men were even longer than the rest of the faces around them.

“We figure we’ve got two weeks to live, if the ship won't work,” the head of the committee reported to Rogers. “We just hit it at the worst time. Last time we got other supplies instead of uranium slugs. This time we were to get that. But we’ve got about the most contaminated set of slugs in the whole planet right now. If we are lucky—well, then we'll be alive two weeks from now. And we'll be getting ready to cook to death the next day!”

Chapter 6 Crack-Up

You would have to live here,” Charlie complained over coffee that next morning. “Now, iffen you lived at Beta dome or even Epsilon, you'd be fixed. Why, we’d just take the tractor and go a-riding right into East Twilight. We’d be there in four-five days, and they’d get a rocket right back to us.” “But we’re not in those domes, Charlie,” Dick's mother reminded him. “We're out in Sigma.” “Yeah. You betcha.” The old man stopped to

swallow, shaking his head. “You’re in Sigma. And it has to be the fool dome right in the middle of nowhere. You can’t go to East Twilight—got the whole belt of canyon country that way, and no tractor would go through it. You can’t make West Twilight, because you’d have to cut way around the Calamity zinc lakes. And you’re way too far south to hit North Twilight, besides which you ain’t fixed to get through Big Lead River. Now if they had a South Twilight, you’d be all fixed. Only they ain’t. Tch!”

It summed up the situation, Dick had to admit. He had been thinking along the same lines as he lay trying to go to sleep, and had been studying the big map of Mercury in the back of one of his Earth-type books.

“You didn’t have to come here, Uncle Charlie,” Ellen reminded him. They’d all given up the pretense of trying to keep things from the children. And, all in all, the younger children seemed to be taking it better than the adults.

“Nope, sure didn’t,” Charlie admitted. “But I got a hankering to see my friends that I hadn’t eat with in a couple years. So I lit out for here. Big mistake. Always knew a man had no business having friends.”

“We’d be in a lot worse spot without you,” Dick’s mother told him. “Stop grumbling, Charlie. You

probably like every bit of this. You used to claim trouble made a man come out of his shell.”

Charlie grinned at her and held out his cup for more coffee. But he had nothing more to say, and the rest were ready to take Snaith out to the ship.

Dick wasn’t sure whether he’d be permitted to come along this time, but habit apparently led to their expecting him with them. He climbed into the tractor with Snaith, his father, Charlie, and the doctor. Holmes was supposedly going along only because he wanted to, but everyone knew that he was there in case an accident happened.

That, however, was one thing about which nobody wanted to talk. The choice of men had been made without any mention of the real reasons behind it. And even Holmes seemed to think that he had brought along his black bag because he didn’t know what else to do with it.

Charlie drove the machine out of the big airlock, and Dick watched the people clustered around. He was lucky, he guessed. At least he would see what went on. But they wouldn’t know until the party returned. The radio probably wouldn’t have been able to cover the hundred miles, even if both sets at the ship and in the dome had been working.

Johnny came out and sailed around them a few times. Dick had begun to think he could recognize the pattern on Johnny’s glowing form. But he seemed to have wispy business of his own to attend to, and didn't try to follow them or to lead them. By now the path was well enough worn that he couldn’t have helped, in any event.

Snaith had never seen the ship, and no amount of telling about it could have given him a clear picture. When they came within sight, his first reaction was one of surprise that it seemed so normal. He must have expected to see bits of its hull strewn over the ground all around. But then he began to realize that the outward harm was a minor thing, and that the real trouble lay inside.

“It—it seems to be bent,” he said.

Rogers nodded. “Maybe it is. I thought that the main girder down the center looked a little warped. But not much. What you see is just the way the hull back there is buckled up. It’s a good thing there’s no air here to need streamlining, because she’s not fixed for that.”

The nearer they came, the more Snaith’s face fell. The ship had buried itself quite a ways into the hard surface, and at first glance it seemed that the big rocket would never work in the position in which it lay. None of them were sure that it would.

Once inside the ship, though, Snaith did another change toward some measure of confidence. Dick suddenly warmed a little to him, realizing the great responsibility that lay on his shoulders. It wasn’t as if the man were a real native of Sigma dome or of Mercury. Up until three years ago, he’d had his own business on Earth. Then a small depression had ruined that—or so he claimed, though most of the people in the dome suspected it was his rather unpleasant manners.

But he hadn’t questioned their decision to send him. It was partly a matter of saving himself, as well, of course; the only hope he had was to have the rocket reach East Twilight. But for once he seemed to have accepted the community decision as being automatically right.

It couldn’t be pleasant to carry the life and death of seven hundred people on one’s shoulders, in such a hastily and badly patched rocket as this, Dick knew.

“Better show me all the controls,” Snaith suggested to him. “Let me see how they work. Might help a little in getting the feeling of things. Then give me half an hour to go through the motions.”

It probably did no good, but Dick took him around, showing exactly what was important, and how the controls worked. He started to go out, then, and leave Snaith alone. But the man called him back.

“Rather have someone around. And you have a feel for machines—I have to admit that. I'm what they turn out in schools, but you’ve got it so deep in you that you don't need schools. You might spot something that looks wrong,”

“I could have used some more formal schooling,” Dick said. If Snaith wanted to be friendly, now would be a bad time to fail to return it. “I wanted to go back to a university and study engineering, but they wouldn't clear me in North Twilight—said I'd be better off staying here.”

Snaith snorted, feeling the controls carefully. “Must have been four years ago, then, when Full- mark was governor. His boy got the chance to go back—and then flunked out. Fullmark got himself known as a crook even on Earth.”

“It was Fullmark,” Dick admitted, and there was still bitterness in his voice as he thought of the days of waiting, only to find that he had been flunked without even knowing what his marks on the annual test were. “But I was too old the next year.”

Snaith dropped the subject at that point for a moment, and then frowned. He hesitated, cleared his throat, and then looked up. “Yeah. Well, you’ll find a whole set of books in my place—brought them along because I never felt too sure about myself. They were meant to be a teach-yourself course, and they’re as good as you can get outside of a university. If I don’t come back, you tell my wife they're yours. If I do make it, you can borrow them whenever you want them.”

Dick gulped out a confused thanks, which the other took without really listening. If he didn't come back, Dick thought, it wouldn't do any good to have the books. You couldn’t learn much in two weeks. But if the rocket carried him through, a chance to study out of modem books was more than he’d ever hoped for.

He quit thinking about the matter then, and tried to help Snaith work out all the possible maneuvers on the controls, feeling the ship in his head as best he could. It should have helped a little, since he caught several bad moves, though Snaith seemed to be doing a good job of pretending, on the whole.

Finally he stuck out a hand awkwardly, and the other took it. There wasn’t much sense in saying good-by, since Snaith would be back in a couple of hours—or good-bys would be permanent, probably.

Dick went out, and the lock of the rocket closed behind him. The men got into the tractor and drove it out of the way of the big tube's blast.

Snaith began as Charlie had suggested. A spurt of hot gasses came from under the ship, to show that the steering rocket was there, and then from the rear as the big tube warmed up. He let it run for a minute, and then must have turned full power into the little steering jet.

Small as the jet was, it held more power than would have been thought. It couldn’t lift the ship, but it did make it tremble and seem

about to rise.

Finally there was a long blast from the rear. The ship seemed to hesitate. It began to slide forward, with the nose tilting up slowly as the steering rocket lifted it. It picked up speed. Then, with a savage blast of superhot gasses, it was jumping forward and up, twisting as it lifted.

It swung in a great arc, heading steadily more toward the vertical. It kept going that way, while a groan came from Charlie and Rogers.

Snaith hadn't cut it off in time. Then the steering rocket stopped, and the opposite side shot out a gout of flame. It tipped the little rocket nose back to vertical, but again he had overshot.

Wobbling and lifting in spurts, the ship began to climb. Snaith must have been dying a thousand deaths inside, but he was improving. The ship went upward, and now began to turn carefully toward East Twilight. It was picking up speed steadily.

"Looks as if he'll make it," Charlie said. "He . .

But he never finished. The rocket seemed to stumble in a sudden blind confusion. It tilted upward, and back down again. It jerked sideways, and then wobbled uncertainly.

"The fool," Dr. Holmes cried beside Dick. Rogers shook his head sharply. "No—not Snaith's fault. It's the fuel—it isn't feeding evenly. Something clogged or impurities in it. I knew it was a risk—I knew it —but I didn't know how to test it . . . Right! Now up! No, no!"

It was too late then, however. The ship had twisted downward in one of its wild spurts. It was perhaps two miles away, but the country was flat, and they could follow it all the way as it tumbled down. Snaith had cut off his steering jet, and given himself a chance to get organized. Rut he had almost no time. At the last moment he jerked the nose up, and managed to get some of the force of the big tube directed downward.

But there wasn't time to recover.

The rocket hit, throwing up clouds of mixed gasses and dust from the ground. It seemed to sag. Somehow, in spite of the hard fall, Snaith had almost made a tail landing. But not quite. The ship suddenly bent over, and came down, this time on its side. It bounced, hit again, bounced feebly, and lay still.

"He got the blast off," Rogers said. "There may be a chance. Come

on!”

The big blast had been cut after the first landing, showing that Snaith had been still alive. But it might have been a dying motion, or the second hit as it turned sideways might have finished what the first shock had only begun.

Charlie was urging the tractor over the ground at its top speed, bouncing along, leaping wildly when they hit a small boulder, but no longer worrying about the treads. They were at the rocket in less than two minutes. Rogers and Dr. Holmes were already through the airlock and clinging grimly to the little outside rail. Dick jumped after them as they slewed to a stop, and was beside them as they dashed through the airlock, which had been ripped open in the crash.

Snaith lay on his side, crumpled around the pilot’s chair. His legs were bent into a position totally impossible for any normal legs, and one of his arms seemed to be in the wrong position.

Holmes watched. “Breathing. Must have caught the first shock on his legs, braced himself with his arm for the second.”

There was nothing they could do there. Holmes dashed back to the tractor, while Dick and his father picked up Snaith and moved along carefully, trying not to shake the man too badly. Inside the little tractor, they began pulling him out of his suit. The legs looked horrible, and one side of his body was a mass of bruises. But Holmes grew somewhat more cheerful as he saw the man pulled from the suit.

He made a careful examination as quickly as he could. Then he reached into his bag and came out with a hypo, which he injected. “Not too bad. I think there is no serious internal injury, and his head escaped damage. If I’m right, he’ll be all right in six weeks, once the bones knit. Right now, about all I can do is put him out of pain with this.”

Charlie eased the tractor into motion, trying not to jar the injured man. But Snaith looked up. His eyes rested on Rogers, “Sorry,” he said thickly. “Sorry. Guess I let you down. Guess . .

He passed out again before he could finish, or before Rogers could assure him that it hadn’t been his fault.

They rode back as slowly as they could, though the drug kept Snaith from feeling anything from the moment he lost consciousness again. Charlie clung to the wheel, staring at the road he was following.

“Never liked that guy,” he said at last. “Just proves a man never gets too old to be a fool. Never saw any pilot could of done better’n he done. Hey!”

Dick looked out where his finger was pointing, and frowned. Along one of the ridges to the left a thin strip of blue fire seemed to run. It leaped up, and bounced back, to run on further.

“Another spook?” Dick asked.

“No,” Rogers told him. “No, and I wish it were. Though that may be the way the spooks got started, from something like that that just accidentally hit on a pattern that had some degree of life. No, that’s just radiation from the sun hitting hard enough to break away free electrons from the rock— and maybe it has some electrons in it that are shot here all the way from the sun. That’s the way a storm starts out, when it is really going to be a storm.”

“Worst I ever saw, with the spots up there no further around old Sol’s face,” Charlie said. “Right now, I’d even like to be a’heading back for Earth. You betcha!”

Dick watched the fire flicker over the ridge again. From somewhere, one of the ball lightning things shot into view, and streaked down toward the dancing flame. It moved back and forth, apparently sucking up the energy that was being released. Those creatures were meant to live on Mercury, Dick realized. To them, the worst the sun could do was only a chance for more food.

Men were foolish to try to compete with them here!

Chapter 7 A Map from Johnny

The dome had known by the way the tractor was moving that things had gone wrong, and they drove into a crowd that was completely silent. Almost instantly, those ahead drew out of the way, giving them room to drive on to Dr. Holmess place.

Dick had seen enough, and he had no desire to witness the setting of the bones that began at once. His father and Charlie finally came out, with the doctor behind them.

“Let me know if you ever want to be a nurse,” the doctor was telling Charlie. “I could use you.”

“Not me,” Charlie denied. “Out there when I was young, we used to have to do things ourselves. Set my own leg once—and I did a good job of it. But I don't like it, and I never will like it.”

“How is he?” Dick asked his father.

Rogers tried to smile. “He’ll be all right. Doc says he'll live as long as any of us. He's shaken up, and those bones are pretty bad, but they'll all heal, if given time.”

He didn't mention that there wouldn’t be time, and Dick let it drop. It was easier not to put it into words. It was pleasanter to pretend that everything was going to be normal, and that their last hope of living beyond the end of then power hadn't just failed.

Neither he nor his father wanted to go home at once. They knew that Dick’s mother would take it without flinching, but somehow, that only made it worse. “Should have stayed on Earth, I guess,” Rogers said somberly. “This coming here was all my fault.”

There was nothing Dick could say to that. They moved along the little street toward the big port, and then began to turn back, no longer able to put off what must be done.

Then a commotion at the gate caught their attention, and they swung back. The old watchman was still there, and he was struggling violently with another of the men—-one of the miners who had gone out with them to repair the ship. It didn't take much to spot the cause. Hanging just in front of the port, as if trying to come in, was the round ball shape of Johnny Quicksilver.

The younger man finally wrested the blaster away from the watchman. “I told you not to shoot,” he said hotly. “Doggone, right now it won't matter if the thing does ruin the dome. And if Charlie and young Dick want the thing left alive, you aren’t going to kill it! After what they've done, they have some rights around here!”

“Thanks,” Dick told him. He’d been one of those who had wanted to shoot Johnny from the sled, but he seemed to have switched sides. Then Dick turned to the port, where the metal screen had been shoved aside for the watchman to look out.

“Come on in, Johnny, if you want to. But I warn you, somebody’s going to take a shot at you. You're not going to be popular with everybody.”

The wispy moved up to the transparent plastic, seeming to test it

for the presence of metal. Then, finding that some of it was unshielded, he shrank to a small sphere, and came through it, landing in the air near Dick's face.

"Better keep him in your room, if you want him," Rogers said. "But he cant have any power, and he's going to get pretty hungry here away from the sun."

"You'd better go back, Johnny," Dick told him. He'd forgotten for the moment that the energy from the sun was necessary to Johnny's life. "Go on, scram."

The creature paid no attention. It began moving about carefully, looking into this and that as it went. Dick didn't know whether it could really see or not, but it must have had some way of sensing things. It moved on down the street while he tried to keep up with it. Then it shot toward the entrance of the central store, where all the usual needs of the people were handed out.

The storekeeper was slowly reaching for his blaster when Dick and his father caught up, but he made no strong protest at their orders to let Johnny alone. He watched the wispy with suspicious eyes, but made no comment.

Johnny settled down then, coming into position over a small tablet of thin plastic sheets that the children used in school for drawing. He hung there, and then seemed to strain himself. The sheet moved very slightly upward, probably drawn by electrostatic force, just as a hair is drawn to a comb that has been rubbed with wool.

Dick tried picking up several of the sheets, and

Johnny bobbed up and down quickly, as he sometimes did to indicate that was right. While Rogers signed for the tablet, Dick spread out one of the sheets on the counter.

Johnny dropped downward at once, and a tiny stream of sparks began to come out of him, running against the plastic and into the counter below. The plastic smoked and began to melt where they touched, but the sparks came in such a thin stream that they left only lines on the sheet, not harming most of it.

Then, as if realizing that he was risking too much by sticking around, Johnny suddenly pulled himself back into his smallest form and shot down the street like a bullet. The old watchman was just starting to close the metal sheet over the plastic window in the port when Johnny hit the clear section and was gone.

“Makes no sense to me,” Rogers said. “I thought he was supposed to be intelligent.”

“Anything that can draw a map *is* intelligent,” Dick said quietly. He handed over the sheet he had been examining.

Rogers looked at him strangely, and then at the sheet with the odd little lines and rough spots all over it. “Does look a little like a map,” he admitted. Then he turned as Charlie entered the store, obviously following them. “Hey, Charlie, take a look at this. Dick thinks it’s a map Johnny has drawn for him.”

Charlie studied it slowly. “Sure could be. And could be just nonsense. I’d have to study tills a mite more. Dunno what good a map would do, though.”

“None,” Rogers said. “Johnny has probably seen men writing, and he thinks it has some value to them. So he came in here and made marks about something. But we can’t tell what it really is about.” “Could be you’re right,” Charlie said. But he motioned Dick to fall back with him. “And could be your father is wrong, Dick. You hang onto that until we can get together in your room. Maybe I can make something of it.”

In the room, though, Charlie had a hard time of it. He turned it and twisted it about, trying to see it from different angles. He shook his head, and then stopped. “Now . . . hmm . . . it’d be about there, at that. Wait a minute.”

He yanked down the map of Mercury that Dick had been using, and began marking on it, using a pencil that had twelve different colored leads in it. When he finished, he compared the two.

“It’s a map, all right.” He nodded positively. “Only Johnny ain’t seen much of maps. He’s put it down by the way the ores and metals are put on the surface; reckon he figgers since we’re all the time hunting metals, that's what we’ll recognize. See, the big lead lake, then Big Lead River, and over here copper. Deeper he dug into the sheet, heavier the metal. Say, that's right smart when you think of it! Yep. And I know what it is. It's a map of how we can get to Twilight—not East Twilight, but the last Relay Station. Never thought of that, but it’s nearer.”

Dick gasped. He'd forgotten the Relay Station, too. It had been set up originally as a link between East Twilight and North Twilight, but with the coming of more powerful radios it had been abandoned. Then, because it had to be justified as long as it was up, they’d fixed it

so that it would serve for a group of scientists who had wanted to study the silicone life that wandered along the Twilight Zone.

“We could reach that, and send a signal right into East Twilight, or get a lift from some of the scientists,” he said. “Charlie, can it be done?”

The old man frowned. “If I was twenty, I’d do it for you, boy. But I dunno. I'm getting old. Maybe some of the young blades here might take the tractor, though.”

They went down to hunt up Rogers, and show it to him. But he shook his head. “No, I'm afraid I can't go along. It isn't exact; you admit it's only a rough map. And there are ore deposits all over

Mercury. No wonder you found something to it— it's like a man looking at clouds on Earth and seeing animals in them. I couldn’t send a man out in a worn-out tractor on a trip like that, even if it was ten times as plain a map. Dick, face it— Johnnys done some clever things, but that doesn't mean everything he does has a purpose we can understand/’

“But . . Dick began.

Rogers shook his head firmly. “No, And I don’t want any more talk about it, Dick. If I thought there was any chance you were right, I’d be in that tractor myself. But we can’t go on believing in fairies—and that’s what this amounts to.”

The old man and Dick went back to Dick’s room. Dick took the map and again compared it. “You’re sure you marked out the metal deposits right on this, Uncle Charlie?”

“After over forty years out there, you think I wouldn’t know ’em better’n the back of my hand? You betcha they’re right, Dick.”

Dick picked up the sheet and compared it again. “Then Dad’s wrong, Charlie. And even if he might be right, we can’t turn this down. We don’t know **a** good way to the Relay Station—but Johnny has it marked down. With seven hundred people maybe dying here, we can’t turn this down!”

“Blamed right we can’t,” the old man agreed. “And don’t you worry. I don’t have to take orders from Bart Rogers—I’m a free prospector, my own boss. And out there a-waiting is my own tractor. Hot-lead, I may be old, but I ain’t that old. Don’t you worry, I’ll make it.”

"*We'll* make it," Dick corrected him. "I've got something we need, too. I've got a chance to get help from Johnny, and I've got a robot, which might be handy."

"Would be," Charlie admitted. "Too bad I can't take you, son, but I ain't kidnaping you, and that's what they'd accuse me of. Besides, I've been a-wandering out there most of my life, and you're a dome boy. You stay here, like your father ordered you."

Dick thought it over, studying the old man, and seeing that he was serious. "You need supplies, I suppose?" he asked at last.

"Sure, I'll have to stock up right smart. Say, I'll bet he would! I'll bet Bart would tell me I couldn't have any, at that. He's got enough food and air, but he'd say no, sure as shooting. And I got enough power, so I wouldn't have to ask for that, but I can't live without air."

"Then I've got something you need," Dick pointed out. "I happen to know what the combination to the mining store is, and there's plenty of air stored in there—and concentrated food, too. Even some fair stuff for traveling out into the hotlands."

"Good. Good. Only you aren't going to start . . ."

"No," Dick told him quietly. 'Tm not going to start anything. I'm finishing it. Either we both go on this trip, or you can stay here with me. We'll have double the chance going together, and you know it."

"I could tell your father I'd make sure you stayed here iffen he'd supply me with stuff," Charlie said, but he wasn't sure of himself now.

Dick shook his head. "He'd tell you he intended to make sure both of us stayed. And once you tipped him off that we'd done any more plotting about this, he would, too."

For a second Charlie glowered at Dick. Then his face began to crease into a leathery smile. Finally his lips parted, and he began to rock back and forth, laughing silently, but with more gusto than Dick had seen since the trouble began.

At last, when he had quieted, he turned to the boy. "Doggone you, Dick, if you'd been bom forty years ago, I'd of made the best miner of you that ever walked this here planet. Yes, sir. A crook, a swindler, a blackmailer—you're as twisted inside as a frogs stomach. And you're straight, too. Yes, sir. When it comes down to it, you see straight, and you get straight to the point. Partner, we're going to reach that Relay Station, or we'll both die trying. And I don't think we're the kind that

dies. Shake."

"You mean I can go?" Dick asked, as he took the other's hand. "You're not trying to fool me?"

"Word of honor. When I shake a man's hand, I don't lie to him. That's rule one. It only takes a small he out there to kill a man, so tell the truth about business. And he like fury when you tell a tall story for fun, just to get all the lies out of your system. It don't hurt then, because nobody but a fool is going to believe you. What's the combination?"

Dick hesitated, and then nodded. Charlie could go out and get the stuff with nobody thinking anything about it. If they saw him going into the mine store, they'd think that Dick's father had told him the combination, and that he was going out in his tractor. But if Dick went along, it would cause suspicion at once.

He told his story quickly. "And where'll I meet you, Uncle Charlie?"

"Just Charlie, now, partner. When we go out that port, you're a man—else I wouldn't have you with me. And men don't go around saying 'uncle/ Or don't you kids use those words any more?"

Dick nodded. He'd caught the pun. "Okay, Charlie, but where do we meet?"

"Outside, of course. If I go out, no questions are asked. If you take a trip out with your robot, they figure that's fine. But if we both go together without your father, they'll notice it. So we go out to that little valley on the way to where you found me, then we start for Relay Station."

It made sense to Dick, and he nodded. But it wasn't until Charlie had gone out toward the tractor that it began to seem real. Dick looked around at his room and tried to imagine what his mother would think when she found it empty in the morning. He could hear his father trying to comfort her, and see his lips tighten at the defiance Dick was going to show for his orders. He'd never given many orders as a father, but he was the city chairman here, and this was an official order Dick was breaking.

Then he sighed to himself, and sat down to write the best note he could. Ellen came in and stayed for a while. But this time he didn't get mad. He found his best mechanical pencil and gave it to her. She acted suspicious for a moment, then suddenly kissed him on the cheek and ran out to try it on all the places where she had no right to write.

Sometimes, Dick told himself, orders had to be disobeyed. And he hoped that his father would understand. He was sure that Rogers would have done exactly as he was doing, if he'd had the same decision to make.

Anyway, either he succeeded, in which case it didn't matter what everybody thought, as long as he could save them; or else he'd fail, and it wouldn't matter to anyone very long. Two weeks wasn't much time for anything.

Chapter 8 Into the Hotlands

The Sun was plainly kicking up worse than ever when Dick came out, just before what would normally be breakfast. He'd known enough to get a good night's sleep before starting, partly for his own good, and partly because there would be less suspicion at the port if he left during the day.

Pete followed along like the mechanical gadget he was, having no feelings about anything, but obeying because he was built that way. They reached the port, and the guard there threw it open without question.

Dick turned up the trail they had made with the tractor, and began slogging along at a slow trot, the robot keeping up easily. If Charlie had waited for him, they should soon be moving along rapidly. For a moment he began to be afraid that Charlie might have gone on.

But common sense told him that Charlie would have tipped off the guard, or done something else, instead of letting him come out this far. He relaxed, keeping to a pace that would not be too tiring.

From somewhere, a wispy popped up ahead of him. He reached for his blaster, and suddenly realized he had left it behind in his hurry! Then Johnny bobbed about, indicating that it was the right wispy, and he relaxed. Charlie would have a pair of blasters, at least, and he certainly didn't need arms against Johnny.

The spook hovered around Pete's head, and then began to slide in. For a second, the robot went off stride, as it failed to keep in step with the orders Johnny must be giving it. Dick started to command it to sleep, but apparently Johnny had remembered the trick, and had thrown the relay. The robot settled down to its former steady pace as Johnny took up the job of guiding it.

He must enjoy it, Dick thought. Probably it was a big toy to Johnny, and a complete novelty. The wispies might be intelligent, but they had never had any chance to control things before. They couldn't hold or shape or control, because they were nothing but a ball of electricity, as unsolid as the thinnest gas. And now, in the robot and touching the relays to make it work, using tiny bits of power that were automatically amplified, the wispy could do most of the things that men did.

It was as if a man found he could float around and dart away at a thousand miles an hour, just by thinking about it. It must have been a wholly new sensation to the creature.

Now they came over the little group of rocks, into the small valley, and Dick saw that the tractor was waiting for him. He speeded up to a sprint, and was on it a moment later, shoving through the little airlock. Johnny started to follow, and changed his mind. He ran around the tractor and took his place ahead of it.

“Forgot my blaster, but everything else is okay," Dick reported. ‘Td like to borrow one from you, Charlie.”

Charlie snorted. “Never carried one, and never will, Dick, except when I'm around people. With one of those, you only get yourself into scrapes you’d have sense enough to stay out of, otherwise.

Forget it, and take over here. You'd better get the feel of driving this while the going is good.”

Dick had meant to suggest the idea, and he slipped behind the seat quickly and shoved it back. He could have used it as it was, but he’d seen his father readjust it, and he knew that his longer legs would make him more comfortable that way. Then he slipped in, dropping his feet on the two pedals that worked the brakes on the tracks, slowing or turning it according to the way they were used. His hands settled over the wheel that gave him some control, by changing the angle of the tracks, and he started off slowly.

At first the number of controls puzzled him, but he had a good instinct for any machine, and this was no great problem. He spotted the robot running ahead, and set out for it.

“Johnny knows how to pick a trail,” Charlie admitted. “He can almost think like a man, when he tries. And if you don’t think that’s tough for something built like him, you should try to think like him sometime. But when you get better control, you’d better get the robot inside. Pete isn’t built to keep up with this here tractor.”

Less than half an hour later the robot seemed to jerk to a stop, and the glow that was Johnny shot out from it. For a second the robot hesitated, then sprang up to the tractor and fixed itself onto the rail behind. Somehow, Johnny had been able to leave orders before he pulled out, it seemed.

After that, they made good time. Dick could see how the old tractor had come to be almost a part of Charlie. Riding in it had been dull,

compared to driving it. The complicated controls made it almost as responsive as a man's hands.

Dick glanced at the clock on the dashboard and realized that by now his family must know. But it was too late for regret or turning back, and he shifted his eyes back to where Johnny was hunting the way through a group of boulders.

Old Hotside Charlie took over after a while, and stepped it up, Dick noticed now that Johnny shifted almost at once, no longer seeming to hunt so carefully. He seemed to leave the little details to Charlie, and only set the broad pattern of their trip. It wasn't exactly complimentary, when Dick had felt he was driving so well, but it indicated that Johnny was constantly aware of the situation, with whatever senses he had in place of eyes working perfectly.

Once or twice he darted aside to leap onto a bit of blue fire that sprang up from the rocks, but he only nibbled at it quickly, rather than trying to absorb it all, and jumped back to the breaking of the trail.

By afternoon, Charlie was nodding to himself. "Been a fool forty years, Dick," he said. "I should have kept that first wispy I hit it off with. I'd have been a rich man by now. Bet they can even find ores, from that map he drew. Hey, Johnny." He spoke into the microphone that was mounted on the wheel. "Know where there is any platinum around here?"

Johnny came back quickly, and made a quick zigzag to the left, then darted back. He spun himself half around and back again several times, and began leading them on.

"Like a man shaking his head," Charlie muttered. "Bet he's meaning the same thing. Knows where it is, but either too dee£) or not enough of it. All the same, wish I'd made friends with that first wispy." He slid from the seat, and nodded to Dick, who took over. This time Johnny did less of the careful picking of the course, as if willing to give Dick his head. Charlie pulled out a rubber air cushion, blew it up, and stretched out on it.

"Better get some sleep," he said. "You drive on about six hours, then I'll take over while you sleep. We got a long ways to go."

Dick nodded, and began figuring out how far. They had been located almost at the center of the hotlands. Mercury was 3,100 miles in diameter, a little less than 10,000 in circumference. And it was one-quarter of that from the center of the hotlands to the Twilight

Zone, where the wobbling of the little planet gave a sort of long night and day. That would make a trip of nearly twenty-five hundred miles. They'd need to make all the speed they could.

Then he was sorry that he had bothered to figure it out! It was longer that way than it had been when it was just a journey. He started to divide it into days of travel, and gave up. There was no way to figure it. On good terrain they could make a thousand miles in a day, but that was only by figuring a whole day of smooth traveling. They'd be lucky, actually, to do a third of that if he had to do all the driving, and even Charlie probably couldn't count on more than six hundred in a good period of twenty-four hours.

The tractor grumbled and groaned, and the old electric motor that drove it from the atomic boiler and generator whined unhappily. It was an old tractor, and it had broken down and been patched up hastily. It could break down again and leave them stranded in the middle of nowhere, to try the impossible trek on foot.

Dick tried to push it from his mind. Ahead of them, a wispy came floating along, and drew close to Johnny. For a second they seemed to be in communication. Then Johnny abruptly changed course, and began heading east of the route he had marked on the plastic map.

The other wispy sailed off again, to return—or for one exactly like it to return—in another fifteen minutes. This time the conversation was longer. Johnny bore west this time, taking them back to the trail he had marked.

The fire along the edges of the rocks was stronger now. And with it, there seemed to come more of the wispies. But Johnny avoided these when they came near them, dropping back to the tractor, and once retreating quickly into the shell of Pete and doing his guiding in the robot for almost half an hour.

Then the things became less common, and he sailed back to his usual position.

Charlie took over, and Dick dropped onto the mattress. On that, the tractor motion was a soothing thing that put him to sleep almost at once. He felt good when he awoke, almost ready to believe that they would have no trouble on the long trip.

Another day passed, and Charlie was glowing happily at the progress they had made. He was already a day ahead of the schedule he had figured for himself.

“All the little demons are out,” he told Dick toward the end of the day, just before Dick prepared to sleep. “And I reckon the little wispies, too. You don't see the small ones much, unless there's a touch of storm. They stay way up at the real center of the hotlands. See there—-a little yellower than Johnny? I don't swear it's a young one, but I kind of figure I'm right about it.”

“How come they don't attack us?” Dick wanted to know. He'd been puzzling over that for hours. “You don't have a full coating of aluminum on your dome here—you have to keep the front and rear clear. And you’ve got electricity in the tractor. I'd think they'd come running for it.”

Charlie chuckled. “Nope, I found out a long time ago that they don’t like some things. One of them's a real long wave length of radio stuff —about two hundred kilocycles to you—kilocycles, not the megacycles we have; that used to be called high frequency stuff in the old days. So I got me a little transmitter built in. Been trying to get some of the domes to try it for years, but they think I’m crazy. That's why Johnny stays away from the tank, except when one of the demons is around. Then he decides he likes that better than demons. Don't think it hurts them—more like a bad smell. Hey, you better get some sleep.”

Charlie was looking worried when Dick awoke on the morning of the third day, and it wasn’t hard to tell why. There was a bumping sound mixed widi the other noises of the tractor, and a faint jarring mixed with the feel of its motion. Charlie was going slower.

Dick started to take the controls, but the old man pushed him away. “No, I’d better keep her. Had the same thing happen before. Might just keep going till we hit Twilight, and might pop off any minute. If she goes, we’d better be set to work like beavers.”

“What is it?” Dick asked. “One of the wheels the tracks run on?”

The old man looked at him with suddenly renewed respect. “That’s it—got a gear missing, must have broke off back there in the last bad spot. If it was just the one gear tooth, it’ll be rough, but we’ll keep going. And if it’s a weakened wheel, and other teeth go—well, you better do a little praying. It sure isn’t any fun trying to weld them things back.”

The next hour was one of worry, but the gear seemed to be holding up, if not exactly smoothly. Charlie had just begun to relax when there was a wrenching, and the tractor suddenly spun around, one

track frozen and the other twisting the whole machine around.

The old man cut power and applied the brake to the other track almost at once, bringing it to a halt. For a second he sat there quietly. Then he reached out and picked up his suit.

“We re going to have to look for the pieces, I betcha,” he said sourly. “The way that went, it probably sprayed itself in six hunks. And if there’s one thing I’d hate worsen having to weld on teeth, it’s having to build up and cut out a new wheel from scrap.”

They climbed down and inspected the machine. Charlie was right. The gear had broken completely, and was missing. It had left only the bearing on which it turned.

“Could be quite a ways back,” Charlie said. “When they pop out, sometimes the momentum of the track holds it up for a while. Felt like that this time.”

They began searching, while Johnny drew closer to the tractor and seemed to watch them unhappily. By the time they had gone back a hundred feet, Dick began to abandon hope, but Charlie kept on, looking from side to side. Dick shook his head and followed the older man’s example.

Suddenly Charlie moved forward quickly, and scooped up something from the hot ground. It was almost half of a gear wheel, broken across the bearing. “Yep. See. Right here is where that tooth broke off—weakened the gear at the same time. Well, if we find the rest, we may get it fixed.” Dick went on searching, and it was his turn Almost straight ahead of him lay the other part, driven into the ground.

He pried it out, and they fitted the two parts together. It was going to be a tough job, but barely within the limits of the little welder the tractor carried. And building up a single tooth wouldn't be impossible.

“We'll substitute it for another one, back where the strain is less,” Dick suggested. “I noticed one the same size that won’t carry much stress, most of the time. That way, it should stand up.”

He turned back to the tractor, just as Johnny came swooping down at him. “Okay, Johnny,” he began. “We found . . .”

“Dick!” It was a scream in his earphones, and the old man’s voice was desperate. “Duck! That ain't Johnny. It’s a demon!”

Something hit Dick across the back then, and he went down in a sprawl, while one of the old man's hands began clawing over him, hunting for metal in the ground that could make the metal of the suit a ground for the electricity in the demon. They seemed to have picked the worst possible spot for it, though. There was no sign of metal, and the rock they were on was enough insulation for the creature. It hovered over them, as if gloating. Before they could roll toward other spots, it began to swoop down.

At the same time, another ball of lightning darted toward them.

Chapter 9 stranded

The second ball of blue light came glancing in, and something about it was suddenly familiar. "Johnny!" Dick cried. At the same time he heard Charlie's voice echo his words. Johnny came in low and fast, with none of his usual fooling around. Static suddenly burst in their phones as they began to try to get up. Dick found his feet first, and helped to puli Charlie up. He realized now that all that had saved them before was the presence

of the tiny little transmitter in the tractor, and that the only safe place was back beside it.

But now, above them, an obvious battle was going on, Johnny had come in before the other had spotted him, and had gotten in what seemed to be a single stroke—a hissling pop of electricity. Now he was moving back, as if trying to lead the demon away from the two men.

They backed toward the tractor, watching the battle going on. They had no way of knowing which was a telling blow and which was only wasted effort. At first it seemed that Johnny was winning, since the other creature was being led away. Then it seemed less certain. Twice Johnny had ducked, and twice the other had seemed to make a point.

The demon was bigger than Johnny, and even bluer, which would indicate that he was in fairly compact form. It wasn't too surprising that he might be stronger, since he'd probably spent his time feeding on the fire along the rocks, while Johnny had been wasting his energy leading them.

Now there could be no question about it. Johnny was losing. He was taking the evasive action, while the demon was plunging in. And

Johnny was shrinking, without growing brighter. What energy he had was obviously being sucked out of him.

He swooped back for the tractor now. But the other no longer seemed to avoid the field of the little transmitter; if it was like a stench to the demon, it was a stench that could be tolerated when more urgent business called the creature to draw close.

Johnny swooped around the tractor twice, ducking each time. Then he drew himself down to his smallest size and made a sudden dart for the robot. Pete had been standing motionlessly. Now he erupted into action. He picked up the metal shovel that had been fastened to the back of the tractor and jumped to the ground, running rapidly toward the demon.

In his hand he brandished the metal tool. His actions were not quite smooth, as if he were trying too hard to control the robot. But his intentions were plain enough. He'd met his match at the purely electrical form of battle they knew, but he had picked up new abilities, and he intended to try them out.

"Hell lose," Charlie said roughly. "He ain't familiar enough with it, and he's forgot how slow that robot is compared to himself. By golly, now I wish I had brought a blaster. I'd plumb enjoy seeing that diing frizzle. Hey, wait a minute."

But Dick had already figured it out, and was up on the tractor before him. He ripped out a section of wiring with a savage jerk, and bounded down, handing one strand to the old man and taking the other himself. With long leaps, he began moving out to where Johnny was taking his stand. Dick was stripping off the insulation as he went, and Charlie was right at his heels.

The demon was apparently willing to take on all contenders. It darted in toward the robot, and away doubtfully as Johnny managed to get Pete's arms up with the shovel. Then it touched the metal of the shovel in a quick brush, and drew back. It had found that the metal wasn't grounded, and it was no longer afraid of this strange metamorphosis of its enemy.

Dick let out a scream as it darted down. But Johnny had also seen the error of his attempt He snapped out of Pete at once, leaving the robot to slump quickly. The demon hesitated again, apparently puzzled by this constant change of form of Johnny.

Then Dick and Charlie were on the scene. Dick tossed the wire down onto the only outcropping of metal ore he could see, and

stepped on it, forcing it down and kicking a piece of rock over it. The flexible wire coiled back over his head, its end bare, though there was still insulation where he held it.

Charlie had taken a stand beside him, imitating his actions.

“Get between us, Johnny,” Dick cried. “Stick to us, and don’t try anything.”

Johnny hesitated as the demon seemed about to swoop, but he had no choice but to obey. The battle had gone out of his control. He slipped between the two men, holding himself to a small, tight ball of force.

The demon came swooping in, sure of itself at last. It might have feared a pole of metal, but it couldn’t see anything menacing in the thin wires that didn’t even stick up into the air.

Charlie and Dick struck together. Dick suddenly whipped his arms out and down, and the wire snapped up over his head, describing a sharp arc. There was a flash from Charlie's wire at the same time, while Johnny huddled closer to the ground, but trusted them enough to remain.

Then a lance of fire lashed down the wire. It had struck the demon dead center and formed a perfect path to the ground. The electrons that gave the creature life suddenly decided to go home to Mother Mercury. They singed the insulation off the wire as they passed, and Dick felt something like a hammer hitting his hands. But the wire carried most of it, and his feet were on rock.

He caught himself before he fell and turned to Charlie, but the old man was shaking his head. “I was about a millionth of a second behind you, Dick,” he admitted. “You got practically all of it. Doggone, I’m sure a-getting old. Slowing up, turning to dry rot They’ll be putting me out to pasture any day now, I betcha.”

Dick shook his hands, but was surprised to find that he had not been hurt. It had been a shock, but not one strong enough to injure him. ‘'Hope you’ve got more wire,” he said.

Charlie nodded. “Plenty of this light stuff. Leave it here. No good with the insulation like that, anyhow.”

Johnny moved ahead of them back to the tractor, and then seemed to remember the robot. He went back for it, and made sure it was in its proper position and the shovel back in place before coming away

again. Dick looked at him, worrying about the loss of energy. But Johnny seemed less worried. He moved outward, and began grazing about, hunting for the fires that danced up from the rocks. In a few minutes he seemed to be his old self again.

"Johnny *must* like us, Charlie," Dick said. "He could have stayed by the tractor and been safe. But he came out all set to fight as soon as he saw us in danger."

"I figgered out he liked you a long time ago," Charlie told him. "Hadda like you, if he was willing to go through all these blamed demons, just to see you got to where you wanted to go. He ain't a fool—he knew what he was getting into before he ever drew that map. Now where in tarnation did I put that box of welding rods? Oh, sure. Here."

The repair wasn't as bad as Dick had expected, though it took the better part of another hour. They couldn't be sure of it, of course—there was no way, even, of knowing that there had been no other flaws. But the repair seemed to be satisfactory, since the tractor ran smoothly again.

It was growing cooler outside now. Lead was solid most of the time. The sun had seemed to drop in the sky, going further and further west as they went east. And since the rays from it were now at a slant, so that the full force couldn't hit, the rocks were no longer over seven hundred degrees in temperature. They were probably down to less than five hundred, which was cool compared with what Dick was used to.

Another day went by, and now Dick began to have hopes. They were drawing close to Twilight, when considered against the distance they had originally had to come. And he began to think that another two days of travel would bring them there.

Then the tractor began to act up. There was a smell of ozone, and a faint hissing that told of something wrong with the motor.

They stopped the tractor, and Dick tossed back the cover and began examining it. He straightened up, with a relieved look on his face. "Just the brushes worn down until the copper contact is beginning to hit," he told Charlie. "We'll be fine as soon as we put in new brushes."

Charlie nodded reluctantly. "You mean iffen we put 'em in, Dick. I ain't been back where I could get them kind of supplies for quite a spell. I put in my last set—the ones right in there—quite a spell back. Well, we can always walk."

“Maybe not,” Dick decided. “They used to make brushes that were just that—tiny brushes of copper- before they got around to finding solid graphite worked as well. We could try making some.” Charlie wasn’t too sure of the idea—nor was Dick, for that matter. But they dug up pieces of silicone plastic and began boring tiny holes and pushing staples made out of their smallest wire through them. Finally, when the bristles were all in, they trimmed them off and installed them.

For a little while, everything went on as if the motor had just been shipped out from Earth. It purred on sweetly, and the scorched plains of Mercury went sweeping by behind them. Then it began to misbehave. The power fell off, though the meter showed as great a drain as ever. Dick thought it over, trying to see how the trouble could come. Suddenly he sat up sharply, and grabbed for the switch.

He was a few seconds too late. There was a sudden hissing spit from the motor, and then it went dead.

“It chewed off the wire, and the blower couldn’t get rid of it, the way it could blow out the graphite dust. It must have gotten into the works and shorted the whole thing,” he told Charlie. “I guess I really pulled a blooper.”

“Got us further n we’d have gone without it, I reckon,” Charlie said. “It ain’t what I’d call a real blooper. Got any other ideas?”

Dick considered disconnecting the motor completely and trying to run a belt from the generator back to the power take-off, but he couldn’t see any way to do it. And it would have been a makeshift that might have lasted no more than minutes.

He gave up. “I guess we walk.”

“Well,” Charlie said slowly, “then we walk. And I guess we can feel lucky we got this far. Anyhow, it’s about time we put that no-good robot of yours to work. Come on, let’s get going.”

They piled out, and began cutting off the dome of the tank. Charlie’s face looked as sad as if he’d been cutting off his own leg, but it was his idea. They had to have a sled to pull their supplies in, and a section of the dome over the tractor would be as nearly perfect a sled as they could get—provided they didn't load it too heavy. The plastic was as tough as metal, and considerably lighter.

Next they began sorting out what they could take. The first requirement was for oxygen. Fortunately, the beryllium-steel bottles

in which it came were lighter and stronger than the steel monstrosities the first men in space had carried. But it wasn't easy to carry enough of the vital gas, even when compressed to a liquid. After that they packed up the tiny little batteries which would keep their suits cooled and power Pete from now on. Dick frowned at that. There hadn't been too many of the right kind of batteries for that, even when they started the journey.

Charlie threw in an air-tent—a thin plastic bag that was big enough to hold a man while he crawled in and loaded his suit with fresh supplies of food, or was forced to take it off for any reason. And finally, they loaded on a bare minimum of food and enough water to make up for what the units in their suits couldn't reclaim.

It was a sad load when they finished. There wasn't enough of anything, and yet there was too much of everything. It would make a heavy load for Pete. As they went on, it would grow lighter, of course, but it might grow so light that there would be nothing left. They had no exact idea of how far from the beginnings of the twilight belt they were, but they were certain it was a good deal further than they liked.

Pete bent against the load obediently. It moved, though it was obvious that it took nearly all his strength.

Charlie went back and found more cord. With that, he added two loops to the sled, stretching ahead so that he and Dick could add their strength to that of the robot.

The old man stood for a long minute, staring at the wreck of his tractor. "Twenty years in the old machine," he said slowly. "Traded my first one for her. Well, maybe if we get where we want, I can rent me another and come out for her. She's a good tractor, Dick—better'n any they make nowadays. And if I'd treated her right and kept her fed, she'd be taking us along as smooth as a clipper, right this second."

Then he turned his back on the wreck, and bent against the cord. The sled began to move behind them, and Johnny went ahead, hovering slowly as he began to try the difficult job of finding a trail they could follow with the load.

"Well, here's where we make a real Mercury man out of you, Dick," he said. "And I got a feeling I'm going to hope I'm as good before we're through with this. I'm getting old, son—downright old and useless. But we got work to do."

He set the pace, stepping along briskly in spite of the load and the

age he complained of.

Dick looked out over the landscape, and fear began to gnaw at his stomach. Inside the tractor, or within a few miles of his home dome, Mercury had been nothing terrible, in spite of all the wild tales. He'd grown up with it. But here, stranded and with an unknown distance ahead of him, it was another matter.

The hard, rough surface under his heavy feet pounded back at him with every step. The blazing sun beat down, still too hot for any living thing except the wispies. And the cracks and pits ahead became ravines and little hills and jagged rocks as he reached them.

Dick had no idea as to how fast they could travel now. Not as fast as with the tractor at its slowest, he knew.

And from now on, they'd be traveling only half the time. In the tractor, he and Charlie had taken turns sleeping, and had kept going steadily. There was no way to do that on foot. They'd have to hole up somehow each night, and strike out only during the hours they called day.

He tried counting his steps, but the number became meaningless. And finally he discovered what every prospector had said over and over, but what everyone had had to learn for himself—that the best way to keep going was just to keep going. Any trick a man tried to make it seem like less distance only called his attention to how much distance really was.

Dick stopped thinking after a while and just plodded on, his feet rising and falling in time to Charlie's even pace.

Chapter 10 The Wispies

Johnny seemed to sense their need for rest at the end of their day. He had hesitated several times as he went along, picking out the smoothest roads for them. But now he suddenly ducked aside, to come back and indicate they were to follow him. They no longer protested anything he did. And they were both glad that he had taken the decision out of their hands when they came to the little cavern he had picked out.

It wasn't much of a shelter, but it did get them

out of the direct glare of the sun. Here the heat all came through the rocks, and since Johnny had picked a place almost free from metals,

the heat was conducted fairly slowly. It meant a saving for their precious batteries, since the suits would have less work to do.

They ate slowly, too tired to push the food up to their mouths. Charlie was still apparently the same as ever, but he was making more cracks about being old. Dick wondered what *he* would do when he reached Charlie's age; even now he was having a hard time holding his own with the older man.

Dick had slept once or twice before in his suit, but then it had been as a lark. Now it was serious business; there was no way to take it off for any length of time. And he had the disadvantage of being tired, and of having his shoulders ache from the load of the sled.

He tried to stretch out and relax, but found that the suit simply wasn't adapted for that. Charlie apparently knew more about it. The old prospector hunted around until he found a spot where he could recline in a half-sitting position, and settled down.

"Keep your radio on," he warned Dick. "My snores may bother you a mite, but we can't lose track of each other."

He fell asleep almost at once. Dick hunted around, trying several spots, before he realized the first one was the best. Then he began to itch. He had thought he was over that stage of getting along in a space- suit. It always happened at first, when a man was just learning to wear one, but he hadn't been bothered for months. Now he found he had to pull his arms out of the sleeves to scratch. Once out, they had a tendency to go to sleep, since the suit pressed against them too tightly.

But finally sleep hit him. If Charlie snored, he didn't know it. And he wouldn't have cared.

Charlie woke him in the morning. And for the first time, he began to understand that the man was old. Charlie's will was as strong as ever, and he could do as much in any day as a young man could. But his body recovered more slowly. Dick felt almost normal, but it was easy to see that Charlie hadn't gotten back all his strength and spirit, by any means. His face was still lined more deeply than normal, and his eyes showed a touch of red. But he made a joke of it, and began loading the sled again, to give it balance.

This time Pete could handle it alone most of the time. The robot had been cut off completely during the night, to save power. But Pete was lucky. He couldn't feel tired, nor could he grow weaker as the day wore on.

They trudged on, striking a long section of hilly territory, where even Johnny couldn't find a good path. They had to go back and pick up the tow- ropes again, to give the robot a helping hand.

Charlie made them stop for lunch, having found a place where some kind of action of the shifting shadows, caused by the wobbling of the planet, had cracked off soft stone. It was soft enough to break into dust as he walked on it, and the dust formed a kind of cushion under them.

"Be lost without the robot, Dick," he admitted. "You were dead right, back there in Sigma. Together, we can make it, maybe. But I sure would've been out of luck if I'd gone highballing along alone." Dick nodded. "That's what partners are for, I guess. Ever have one before, Charlie?" "Sometimes," the old man said. "Yeah. I mind one you'd be surprised at. Or didn't anyone ever tell you your grandfather came up to Mercury with the first group—your mother's father, that is? 'S a fact. Taught me half what I know, before he struck it rich and went back Earthside. I was just a kid then, myself. He wanted me to go back with him. But I guess I ain't sorry I stuck—not even now. Come on, we gotta get going again."

Then the rough ground suddenly turned into the smoothest of their whole trip, and they found themselves on something that might have been a sea- bottom once, except that Mercury had never had seas. It was probably a great flow of some material that had leveled out as it cooled and never been disturbed again. Pete took the load completely, and Dick and Charlie moved along almost as easily as though they'd been walking the streets of Sigma dome.

Johnny had been doubtful about going through it, and had seemed to waver between two courses, though the men couldn't see why. It was obviously a big help, since they were making much better time. But now Johnny was nervous, fudging by his actions. He kept leaping upward, as if to study the terrain ahead, and skittering about to check up on things at the side.

Dick wasn't too surprised when he saw one of the big demons appear; at least, he was sure it was a demon, because it made no attempt to communicate with Johnny, as the true wispies seemed to do.

But this time it made no move to harm them. It paced along beside them, while Johnny tried to quicken their gait. Once or twice it moved toward them, and Johnny swooped back, apparently bristling with his own type of anger, since their earphones crackled with static

each time. But nothing more seemed to come of it all.

Dick had almost decided it hadn't been a demon after all when the second one appeared on the other side. Then more came into view. There were about twenty of them, moving in toward the little caravan, and more seemed to be coming up over the edge of the plain.

Johnny had apparently expected two or three, and had somehow figured they could get through. Perhaps they were more sluggish here, near the edge of the hotlands. Or perhaps it was simply that the little packs of batteries didn't offer them the satisfying meal they could get from a dome or a tractor. But in any event, this whole colony had come as a complete surprise to the wispy. He wobbled about unhappily.

Then, abruptly, Johnny seemed to make up his mind. He rose upward, shrinking to a tiny ball. He hung there a second, and then went scooting off, heading back toward the hotlands at the highest speed he could make. Dick turned to stare, and saw him disappear from sight.

Suddenly Dick felt completely lost and alone. He'd come to depend on Johnny more than he realized. In fact, he'd expected Johnny to get him out of this mess, too. Now, when Johnny simply gave up and beat a retreat, leaving him and Charlie alone, it was too much.

He stared helplessly back where Johnny had disappeared, and then toward the demons that were now slowly drawing closer. There wasn't even a good piece of wire with which to defend himself.

"Dick!" Charlie's voice hit his ears, snapping him out of his shock. "Dick, give me a hand. We ain't dead yet."

He swung to see the old man frantically unloading the sled, with the robot making a clumsy attempt to help. The metal oxygen tanks went spilling off first, and Charlie began to drag the sled toward a spot on the floor of the rocky stuff near them. "There's metal here," he said.

Dick couldn't see how it would do much good. And then he got it, as Charlie turned the sled over, making a place under its curvature just big enough for the two men and the robot. He grabbed up the oxygen tanks and began carrying them over, piling them along the sled, so arranged that some touched the metal Charlie had spotted, and the rest touched ones which did touch the metal.

There were chinks in their armor of oxygen tanks when they were finished, but it seemed possible that they could get by for a while. By touching their suits to the ground, they had an additional armor against the creatures.

Dick directed Pete up toward the front, since that was most completely covered by the oxygen bottles. There was no sense in protecting themselves without taking care of the robot, since they still needed him to carry their supplies. Then the two men slid under, rearranging the bottles to shield them as best they could.

The demons held off for a while, and then began to approach. Unlike the wispies, there seemed to be no effort among them to communicate. They simply began to bunch together and sidle in against the men.

"Don't you go blaming Johnny for running out on you, Dick," Charlie told him. "You can't blame him. Sticking around here wouldn't do us any good, because they'd eat him up in no time. I told you them things eat wispies. And he had enough sense to know he'd only keep them here longer if he did try to keep just out of their way. Maybe this way we'll be able to wait 'em out."

Dick had no desire to blame Johnny, but he felt a strong sense of loss now, and a growing feeling for the future—a feeling of pure fear. They'd be lost without Johnny. So far, the only hope they had saved out of the wreck of the tractor had been the fact that they had a guide through the edge of the hotlands who could be depended on.

"Just an error—a mistake. Proves them things are as real as we are, I guess," Charlie went on. "Johnny figgered he could get us through, and he slipped up. Can't blame him for trying—probably the other ways were worse'n this one. He . .

He broke off his alibi in the middle, and suddenly pointed through a chink in their armor. Dick bent forward with a mixture of hope and fear, and his heart sank. Coming through the space from the north were another group of spooks, traveling as if they were late for the feast. If the demons kept increasing in number, some were bound to break through. If enough attacked, most would be grounded, but some would be sure to find a chink that hadn't been protected.

Then he let out a cry. "Johnny 1 Charlie, its Johnny, coming back with *his* people!"

"How can you . . ." Charlie stopped, and sudden hope spread over his face. "By golly, Dick, you're right. That group is a-talking it over,

and the demons don't do that."

The new group had drawn back, and a few seemed to be moving about, giving orders, or passing on information.

There were more of them than there were of the demons, Dick saw. But he knew that a lot of them would have tough going, since the demons made up in ferocity for their lack of numbers.

"Come on, Charlie," Dick cried. He tossed the sled aside and got to his feet. While Charlie stood up in doubt, he began stacking the oxygen tanks on top of each other, steadying them until he had a pile of them, reaching well above his head and touching the metal lode at the bottom. Charlie nodded quickly, and began erecting a similar pile.

"You figger them things is going to come down just to kill themselves?" he asked.

"I dunno," Dick said. "Maybe we can attract them to us somehow. Or the wispies can use these as a goal to shoot between. You claim the demons aren't too smart."

He couldn't finish his ideas, though. Before he could go further, the wispies moved into action. Five of them seemed to work together as a unit. They suddenly darted for some of the demons, each group of five picking on one of the enemy and surrounding him.

The demons not attacked seemed to be uncertain about this strange maneuver. Some of them moved up to enter the battle, but most of them drew back. And the five around each of the trapped demons went into action, herding their captive along at a rush. They didn't all succeed, but there was a rapid succession of crackles of electricity as the ones they had fooled were driven against the metal of the oxygen tanks, and grounded out of existence.

They moved back for more, repeating the same maneuver. Dick saw one of the wispies miss its aim in its effort to keep its captive in line. It went down the tanks to the ground with the demon. But the others went on. And now there were two wispies for each demon.

A sudden streak of blue fire lashed through the space above them, and jerked toward the ground behind them. Dick swung about, just as he saw something strike the robot. Pete stood for a second, and then began toppling. And the wispy over him drew back, bobbing unhappily about. Johnny had seen the danger, but he hadn't been in time to save Pete!

Dick swung around and moved toward the robot. The demons had had enough by then, and were running in full flight, with the wispies after them. They vanished over the horizon. A moment later the wispies were back. Johnny went up and made contact. When he returned, the other wispies darted away, toward the direction from which they had come.

The battle had been a short one, and evil had been vanquished by good in the proper style, Dick knew. But he couldn't feel too cheerful about it as he bent over Pete. The robot had been their assurance of a reasonably full supply line. Now he was gone.

The demon that had landed on him had shown none of the restraint Pete had been used to from Johnny. Johnny had kept carefully away from all main power sources, and the demon had gone straight to those power supplies. Now Pete's circuits were as dead as the demons that had been driven down the columns of oxygen tanks.

But there was no use crying over spilled robots, Dick knew. In a way, they were lucky. They still had Johnny. Pete had been nothing more than a mechanical horse to them, but Johnny had proved again and again that he was a friend as well as a help to them.

Charlie helped him right the sled and begin reloading it. They tossed out the batteries that had been spares for Pete first. And then, reluctantly, but driven by the fact that they couldn't take more than they could drag with them, they began laying aside bottles of oxygen and other supplies. It was a much smaller load when they finished, but it was still enough for the two of them.

Johnny hovered around Pete uncertainly, as if mourning for a friend. But at last he lifted himself and prepared to begin the trip again. He hesitated, and seemed to hover uncertainly. Then he moved to the batteries that had been for Pete.

"Go to it," Dick told him. They were no good for anything else now, since they wouldn't fit the suits.

In a few seconds Johnny had used up the electricity in the batteries and was moving ahead of them again. But he hardly looked as if he'd had a full meal.

Dick began to realize that they couldn't count on much more help from Johnny, either. As they moved out of the hotlands, the wispy was getting less and less energy from the sun, while expending energy at a steady rate in guiding them. Sooner or later Johnny would have to go back where he could let the sun do a thorough job of recharging

him.

When that happened, Dick and Charlie would be strictly on their own.

Chapter 11 River of Lead

Hour by hour, Johnny seemed to shrink and lose - energy now, but he kept on. And his fatigue could have been no worse than that of the two men. The sled was heavy and clumsy, and they were already strained with the constant pressure to go a little faster.

Twice Johnny located caverns for them to hole up in, and twice they went on past them, trying to get just a little more distance behind them before they dropped. But at the third one, Dick gave up, recognizing that they were about ready to drop.

“Anyhow,” he told Charlie, "Johnny can’t go on like this forever. He must go back to the hotlands when we sleep. He doesn’t look as if he does, but he should.”

“Probably hangs around to watch over us,” Charlie said wearily. They were beginning to realize that Johnny had taken on more responsibility than one wispy should have to bear. To Johnny, they must seem pretty feeble creatures, having to protect themselves in heavy suits and carry ponderous supplies to live at all. But apparently Johnny had a stern determination to finish what he had started.

Now he hovered around them as they went down into the little cavern. It was below the ground this time, and not as good as the ones they had passed up. But they were too tired to care much. The wispy watched them begin to settle down, and bobbed about uncertainly.

“Go on back, Johnny,” Dick told him. “Go back where you can find some of those fires coming out of the rocks to eat. You look half spent.”

The wispy still hesitated, but finally took off. Charlie watched him leave through fatigue-reddened eyes, and shook his head. “Sometimes, lately,

I begin to think I can figger what the beggar’s feeling, Dick. And right now, he acts plumb scared. Maybe it's dangerous for him to travel across this country—maybe more demons are around waiting for him.”

Dick had the same feeling, though there was no way of being sure of much that went on inside the little ball of lightning. He speculated idly on it, but he couldn't keep his mind on anything except the constant ache in his legs and his shoulders, or the messy, dirty feeling he had from being in the suit so long.

But even that couldn't keep him awake this time. He ate part of a normal meal, then put the rest back on the storage shelf in his suit. He found a place where he could he back, and started to settle into a comfortable position. But before he had touched his head to the cavern wall he was asleep.

He began having a series of fantastic dreams then, in which his grandfather was pulling a broken tractor across a lake of boiling lead and swatting demons aside with a wave of his hand. The figure turned to that of Charlie, who was trying to run away from him. And then he was back home in bed, with his mother trying to feed him a big bowl of electricity, and worrying because he couldn't digest it properly.

Then the nightmares really came. He had no clear pictures. There was just a feeling of horror that shifted around, growing worse each second. And physical pain coupled in, so that he seemed to be feeling hot needles of shock hitting him.

Dick became half conscious then, but everything was still fuzzy. He shook his head, then leaned back to try to sleep again.

Something bit him, with a sharp, stinging sensation.

He jerked awake this time, to see Johnny dancing up and down in front of Charlie. As he watched, a tiny flash of electric energy shot out, striking against the older man's helmet. Charlie jerked and moaned, while his beard seemed to spread out and stand on end.

Dick blinked. For a second he thought he had been wrong, and that it was a demon in the cavern with them. But now Johnny came over, and seemed to realize that Dick was awake. He jerked out the entrance of the cavern, then darted back, and jerked out again.

Dick didn't stop to think it out. He knew that Johnny wanted them out of there, and that it was urgent. With a moan of agony, he got to his feet and began shaking Hotside Charlie. The old man came to at that, and got to his feet, striking out with a heavy fist, but missing Dick. Then his eyes were open, and he started to apologize.

Dick didn't give him time. "Out! Grab our stuff and get out, Charlie," he said. "Johnny's going crazy!"

It was true. The wispy was dashing up and down, trying to get them into motion. Dick grabbed for some of the supplies they had brought into the little cavern, and began scrambling up to the surface. As he moved, he seemed to feel the wall of the little hole begin to move. And Charlie must have felt it too, since he let out a sharp cry and redoubled his efforts.

The wall of the cavern slanted upward steeply, and they had trouble with their loads, but they were outside, just as the opposite wall of the little cavern broke open and a torrent of liquid lead came bursting out!

In another few seconds they would have been caught in it. Now it bubbled up and began cooling off. They were far enough beyond the true hotlands for it to cool to a solid state, and Dick shuddered as he realized what might have happened if they had been caught in it. Their suits could stand hot lead for a while, but they wouldn't have been able to free themselves from lead that was turning solid around them!

Johnny had arrived in time—but it had been too narrow an escape to suit Dick. He frowned down at the stuff that was still oozing up from a few places where the surface hadn’t yet hardened.

“How come?” he asked. “I thought we were beyond all the real hot stuff.”

Charlie shook his head doubtfully. “Underground river of it—probably stirred up by the storm. Must come down here from some lake further back, and may even get clear to the twilight belt. Mercury has plenty of heat inside here to keep the stuff warm, if it finds a good passage.”

Dick might have argued with him, but he'd seen it, and he had more than enough proof. Whether it was a river that ran under the surface or only a product of some local volcanic activity didn’t matter. They’d gotten out in time, and they could worry later about how it had all happened.

Then he looked down, and frowned. “We’ve lost more supplies, Charlie,” he said slowly. “I got some of them, and you have a lot there. But even so, were short at least half of our orygen.”

They began checking, but gave up. There was no use in counting tanks and batteries now. They knew that there weren’t enough, and figuring just how much they were lacking didn’t help things.

Johnny looked a little better, but he wasn't his old self, and he seemed to be a bit slower as he cruised along. They came out of the good, flat section, and again had to go through a rough scraggle of little hills and sharp crevices that required hard work in pulling the sled.

There seemed to be little more trouble that could happen to them, but they hadn't really had it all yet, as they found out later. They were working their way across a sharp break in the ground, like a huge mud crack twelve feet across and about thirty feet deep. Dick stood at the rear of the sled, holding it by his rope, and Charlie was already across the little chasm. Johnny was hanging around, waiting while they worked the sled over. Then suddenly Dick's rope broke under the load.

The contents of the sled went hurtling down into the chasm! They were left with an empty sled and the oxygen and batteries they were wearing. Beyond that, everything lay thirty feet below them.

For a minute Dick stood staring down, and there were tears in his eyes. He wanted to sit down on the edge and begin crying. And he wanted to shout at the big joke the fates had played on him. But he could only stare at the stuff that had spilled from the sled, without moving.

Charlie pulled the sled all the way to his side and began unfastening the ropes that were left. "Should have guessed it was going to happen. Threw the rope across and looped it over a rock here. Went across it, swinging and swaying, until I could pull myself up. Then I just tossed it back. The rock was sharp, Dick, and the rope we have takes punishment fine, up to a point. But then it begins to give out

We got real hotland rope, and it's too cold for it here. Well, these look okay."

Dick watched him move to the edge and stare down, before he realized that the old man had every intention of going down after the supplies. Then the stupor of the new trouble was gone from his mind in a quick moment, and he was himself again.

"My job," he told Charlie.

Charlie sounded stubborn. "I should have checked that rope. And that makes it my fault."

"We both should have checked it. But I'm still lighter than you are,

Charlie. And here, even five pounds will make a difference. Maybe five ounces will. Toss me the rope, will you?"

Charlie hesitated for a moment. Then he threw it over, and Dick estimated it carefully. Long enough. He caught it close to the edge, while Charlie braced himself. Then he stepped over.

He hit the wall of the opposite side with a heavy thud, but he had been braced to take it up with his legs, and they had grown used to this type of passage across the cracks here. Charlie grunted, but he held on somehow. Dick began lowering himself into the crack. Ten feet from the bottom, he found that it was narrow enough for him to go the rest of the way by bracing his arms and legs against the two walls. And at the bottom, there was barely room to turn around.

The things from the sled were scattered everywhere, and most of them were going to be hard to tie to the rope. Dick went after them, chasing down the oxygen tanks. They had been designed to take rougher abuse than this, but he was worried about the batteries. lie examined them carefully. Most of them were seemingly all right, though one had a crack in it. It had landed right side up, and none of the fluid had spilled. He had no way of knowing whether it would still work, but he unhooked the fairly fresh battery on his suit and hooked the cracked one on.

The motor went on humming, and he nodded to himself. He'd have to be careful not to lie or sit down with it on, but it would be all right as long as he kept it upright. The thick liquid would eventually evaporate in the vacuum here, but not before he had most of the good out of its charge.

Above him, Charlie waited patiently, or moved along the edge of the chasm, trying to spot anything that Dick had missed. He reported two more batteries lying further down, and out of Dick's sight. As far as they could remember, that accounted for everything.

Hauling the things up wasn't hard, but it took forever. The rope barely reached, and there wasn't enough to make a good hitch around more than one or two things at the same time. Charlie had to pull up and let down until it seemed to Dick that the old man's arms must be ready to drop. Yet either one would have been delighted if there had been more to raise; it might have meant more hours margin before they found themselves faced with either no power or no air.

Johnny had darted upward, apparently trying to find a place where there was stronger sunlight to give him more badly needed energy.

He was looking worse, now—enough to be seen. The swirling spots that formed a pattern on his surface seemed to be slower and less orderly.

At last the final load was raised, and the rope came down for Dick. He took a grip on it, wondering if it would hold his weight again, and whether Charlie would be able to take the strain if it did. But he finally worked his way up to the edge and Charlie's reaching fist without further trouble.

Now, woodenly, they took up the march again, leaning together as they pulled the sled along. The sun was close to the horizon, but they had decided before that neither one of them could trust himself to guess how far from the middle of the twilight belt they were. All they knew was that they had to go on, regardless of fatigue or anything else.

Now Johnny came bobbing back from a scouting trip ahead, and his actions showed that something else had come to plague them. Dick watched him for a second. "More of the demons?"

Johnny twisted about in the manner that appeared to mean "No," and swirled uncertainly. "Lost?" Dick tried, but with the same result. Charlie stared doubtfully ahead, and his voice was as tired as his eyes. "So something has happened to the trail since you saw it before, and it's going to be tough. Think we can make it at all, Johnny?" This time the wispy bobbed a doubtful assent. Dick shrugged and bent forward against the tow- rope again. "Okay, Johnny, lead on. If we have a chance, we have to take it."

They came to the trouble within five minutes— another chasm that seemed to have cracked open within the last few days. Here the solar storm going on was something that made much less difference than in the center of the hotlands, but it had probably upset the balance of the crust all over the planet. The opening before them looked like the product of some kind of an earthquake, though Dick was unfamiliar with such things except in pictures.

It was at least twenty-five feet wide, and seemed to be twice as deep, though the wall on this side had another crack that ran down at a steep angle, but one which might be traversed for half the distance down or more.

Dick stared into it, bothered by the feeling that it might snap closed on them at any minute. But he put that down as sheer wild imagination, and began getting the sled ready to carry down. Below,

and within reach of the slanting crack they would have to climb down, was a little shelf. They examined the rope carefully this time and made sure everything was fastened on to the sled. Then they let it down gently, until it touched. Dick shrugged as he dropped the rope after it. Now they had to get down there.

Climbing down was rough, but not impossible. They reached their supplies, and lowered them the rest of the way to the bottom. This time, they had to trust themselves to a combination of falling and sliding, while they tried to hold themselves back with their hands. But they landed nearly on top of the supplies, with no bones broken, and with no real damage to their suits.

Johnny had come down part way into the narrow channel, and now started north along it, leading them to some place where he seemed to think they could climb out. But Charlie sat down, shaking his head. “This is good enough for me, Dick. We can stop here as well as anywhere else. And I don’t mind admitting I’m plumb beat”

Dick felt the same. He dropped carefully onto the floor of the chasm, making sure the battery was still upright, and began to reach for the last of the food that was inside his suit. After that they'd have to get along without eating, unless they reached an outpost somewhere.

He glanced down, and then leaned closer for a look at the surface on which they sat. "Looks like we found one of those underground lead rivers, Charlie," he said slowly. “This has been worn smooth, and it’s still coated with lead. It must have cracked right above the stream.”

Charlie stared at the thin layer of lead under him.

"Well,” he decided at last, “if the river is going to start flowing again while we sleep, it’ll just have to do its worst. I’m a-fixing to sleep no matter what happens. I betcha I do.”

“Lead’s a soft metal. It should make a good bed,” Dick agreed. He slipped his shoulder back against one of the walls, bent his head forward, and was asleep.

Chapter 12 The Impossible Trek

There was no sudden return of a river of lead during their sleep, though Dick was almost sorry about it as he awakened and realized what lay before them. Charlie was still sleeping, his face now sagging and gray, and no life left in him. With the pretense he had kept up while awake stripped away, he was suddenly old and gaunt.

Dick knew that he probably looked the same. It wasn't age, but hopelessness that was working against Charlie, just as it was hitting at him. They'd practically lost all faith in their ability to get through. And yet they had to go on, as long as they had a breath of air left. Behind them lay seven hundred people, and their self-chosen responsibility was heavy on their shoulders.

Dick started to go over to the older man, and then shrugged. Another hour or so of sleep wouldn't make that much difference. It might even help them. He squatted down by the sled and began replacing the oxygen tanks on both suits, and testing the batteries.

Then he started to reach for breakfast, until he remembered that all the food they had packed into the suits was gone. There were still the emergency lozenges—enriched candy that gave the greatest possible amount of energy for its weight, but which was supposed to be kept until the last possible moment. Dick shrugged off the faint touch of hunger that had come when he knew there was no food, and sat waiting for Charlie to awake.

But the reactions of Hotside Charlie surprised him when the older man did snap out of it. He looked up at the walls that rose above him, and shook his head.

"I guess I'm quitting, Dick," he announced. "I've had enough. Too much, by golly. And I ain't as young as I used to be. Rot has set in. And it's time I quit play-acting I was still a real man. You take what you can and go on, and I'll just sit here, waiting for that lead river to come back!"

It shocked Dick. Charlie was the one man he would have sworn couldn't have said it. It wasn't like him in any way. Doc Holmes had admitted that Charlie had the strongest will to live he'd seen. And he wasn't in as bad shape as he had been when Dick had first found him.

Dick sat puzzling over it. His mind was still thick with fatigue, but he knew there must be an answer somewhere. And he finally pinned it down, after seeming to chase it through his whole mind and back again.

"All right, Charlie," he said. "I guess you're right. We might as well

quit kidding ourselves. You're an old man, and I'm just a kid. We can't take it. And I'm glad you had the courage to admit it first, because I don't think I could have done it . . . Well, I guess we might as well send Johnny home." Charlie sighed, and leaned forward to study Dick's face, but the boy knew nothing would show there but weariness. "Yeah. Yeah, Might as well send Johnny home, Dick. But I still think you could go on. I'm telling you how I feel, but you don't have to do anything just because I do it."

Dick shrugged, and sat quietly. Charlie fiddled with his finger in the soft lead of the floor, drawing ticktacktoe marks on it. Johnny darted down, and up again, but they paid no attention to him.

Finally Charlie sighed heavily. "I feel sorry for your mother, kid. She's going to feel mighty bad, I guess. I'll bet she's a-thinking you're all set to come back bringing help any minute. She knows you're the kind who can do it, too, by golly. Guess she's apt to hate me for dragging you off thisaway."

Dick said nothing. He put his shoulder back against the wall, and bent his head down, closing his eyes. He heard Charlie stir impatiently and sigh again, but he didn't look up.

"Wish I was young again. Sure do. You betcha." There was a querulous note in the old man's voice now. "In them days, nothing could have kept me here. I'd of been up and going up this thing so fast you couldn't say Jack Robinson. Mighty spry I was, when I was young like you, Dick. Give me six hours sleep, and I could get so full of pep nothing could hold me down. And I didn't have a mother and dad a-sitting home waiting for me. Nor a pretty little sister. But I couldn't be tied, no sir. You betcha."

"I guess you must have been quite a man," Dick agreed. "You always were a lone wolf. Maybe it's because I've always had a family that I just haven't hardened up. I couldn't have gone this far alone, and I suppose you could have done better if I hadn't got in your way. But I'm stubborn. I always was stubborn, Charlie. I guess I just had to come along because I was stubborn."

Charlie managed a heavier sigh this time. "Know just what you mean. Stubbornest man that ever lived, myself. Why I'd starve myself to death in a barrel of cheese iffen I'd said I wasn't hungry. Some folks used to call me Old Stubborn."

Dick's head came further forward, and a faint snoring sound came from his mouth. Charlie squirmed on the lead, leaving marks with his

mittens as he swung from side to side. He sighed, but this time it was more completely a part of himself.

He squirmed again, and finally began to heave himself to his feet.

"Doggone smart aleck," he said accusingly. "And if there's one thing I never could stand, it's a smart- aleck brat who thinks he knows ten times as much as his elders. Can't stand young fools who think they know all there is to know. Dick, you young whelp, you get up from there, or I'm not too old to tan the hide off you. Get, now!"

Dick grinned wearily, and climbed to his feet, staring at Hotside Charlie. "Old Stubborn," he returned. "I should have made you sweat a lot longer for trying a dirty trick like that on me. Do you think I couldn't figure out what was on your mind? I know. Half supplies for two are full supplies for one. So you were going to make me hate myself the rest of my life, just so you could feel noble about sending me alone."

"Now see here, you . . Charlie began. Then he snorted faintly. "Doggone you, Dick, never had a better partner in my life. Not even your grandfather. Just like him, except you're a *real* Mercury man. I betcha you'd of sat there till you did starve before you'd have given in. Stubborn, contrary, omery young whelp. But by jingo, you almost make me feel young myself."

"I'd have sat there until you came along, Charlie. And the truth is that I just couldn't have gone on alone if I'd wanted to. I couldn't take this by myself. I wasn't lying about that."

"It's foolish, boy—but it sounds land of good," Charlie said. "Well, where's Johnny taking us?" For a while, the byplay had almost revived them. But their muscles remembered the day before, and the day before that, and the brief flair of high spirits sank down again as they hiked along the floor of the chasm, following Johnny Quicksilver.

It was nearly noon to them when Johnny finally led them to a section where part of the opposite wall had fallen in. It had Uttered the floor of the chasm with rubble and had knocked a great gouge out that led up at a steep, but climb able angle.

But it was unsure footing, and the sled held them back. Time after time they had to leave it and go searching for a place where they could find footing enough to drag it up after them by the rope. And each time required a long and careful search to be sure that their motions wouldn't simply pitch them back down to the bottom again.

They went on through that day, dragging the sled behind, while it became lighter steadily as the oxygen tanks and batteries were removed. But there were no more cuts in the ground. It was rough, but Johnny now found a passable route for them. He was showing his own starvation more and more, but he kept on, with no hint of turning back. And the men couldn't give up while an alien life form kept wasting away to save them. Their pride in being human would have driven them on, if nothing else had been involved.

They slept that night on the surface, making no effort to find shelter. Johnny apparently wasn't worried. Probably the last demon had been left behind, since it was already cool enough here to make life uncomfortable for them, though it would have crisped the men in minutes without their suits.

Johnny woke them in the morning, and they went on. Now Dick was beginning to be aware that he was hungry. He kept imagining the dinner his mother would fix when he got back to Sigma.

He must have mentioned some of the food aloud, because Charlie grunted unhappily. “Com muffins. Com muffins, and hog bacon, real cow butter, coffee from trees, and heavy cream. And you start with a glass of juice from ripe oranges. That's what I miss, Dick—real food, instead of this synthetic stuff, or those hydroponic things. Been a long time. Got so I used to dream about eating soya meal and vitamin pills when I thought about a feast! Well, some day we’ll both eat real food —and you probably won’t like it, never having had it. And I probably won’t eat it, because it has been too long. Forget it, just dream that we find a place where they’ve got some synthetics waiting for us. That’s all I ask.”

They threw away the last empty bottles of oxygen, and put on the reserve bottles from their suits. Those held more than the bottles they had been wearing, but the time limit was now fixed. They were surprised to find that they still had extra batteries.

“Something’s screwy here, Dick,” the older man said. “You know what I been figgering? We’re already in the twilight belt. We been in it for the last thirty miles. Because I remember that territory we went through now. And it’s a long ways from the Relay Station. Either Johnny’s lost, or some mighty funny business is going on.”

“Johnny wouldn’t try any tricks,” Dick protested.

“Who said he would? I just think something's gone wrong. Maybe he had to change his map, because we couldn’t cross where he meant

us to without the tractor. And maybe we still got three days' walking to get to Relay Station. It's about that, if I remember right."

Dick was shocked, but he couldn't really believe it. He had only been in the twilight belt a few times, and those had all been at North Twilight, which really lay at the pole, and wasn't like the rest of the belt. The real belt was the section where the sun seemed to come up out of the sky and climb a ways, then turn back down. Each eighty-eight days Mercury went around the sun once. And each time she did, she wobbled, first to the right and then to the left, making these narrow bands where there was a season of dawn and dusk. On the belt, men could set up larger cities, since the expense of cooling or heating was nothing beyond what it was worth.

He studied the sun now, noting its position. He stirred uneasily, trying to remember how high it should be, and failing. But he had a feeling that Charlie was right, and that they had been led into the twilight belt, but not where they had expected to come out.

It was too late to change now. They had perhaps twelve hours of air each, if they were careful to guard it and to keep from useless exertions.

They had left the sled behind, since there was now almost nothing to carry, but they were not making any better time because of it. Their muscles were rapidly reaching the stage where they would be able to move only by lying down and waiting for a rain to wash them downhill—and it never rained on Mercury.

Johnny had gone off again. He acted as if this was all territory he had never seen before and that he needed to check up as he went along. That fitted with Charlie's idea that they had been forced to take a big detour for some reason. Yet Johnny was also acting as if they were coming to some objective which should be reached at almost any moment.

The wispy came rushing back now, bobbing about. He was more excited than they had seen him since he had first begun the trip, but they had no way of knowing whether it was good news or bad.

They didn't waste time trying to quiz him. They tottered to their feet and followed along. If Johnny knew where they could find help with the amount of air they had left, it would all be well. If he didn't, they could do no better by themselves. By this time, they were quite sine that Johnny knew exactly how long they could live on the amount of air they had. His other behavior had indicated a long,

profound consideration of the peculiarities of humans, and they doubted if anything so important as air had escaped his attention.

Sometimes now, things were all confused. They had cut down the trickle of air flowing into their suits. Men could live longer that way, since most breathing wasted a good percentage of the oxygen. But it meant living in air that was stuffy and thick, and they grew sleepy at the first exertion.

At the moment, Dick half thought he was Charlie, and was wondering why Charlie had fixed himself up to imitate him. It didn't seem quite right. Charlie was carrying on a long conversation with some old acquaintance in which he assured them that he was much too old to lead the expedition to the Bronx Zoo, whatever that was. He'd seen an aard- vark dancing with a dodo, and he wanted air to waltz me around again . . .

No, that last part was Dick, and he had been trying to sing.

"Will you lend me your comb, Vance?" Charlie asked politely, tapping Dick on the shoulder. Tm going to the aviary this afternoon, and my brother is dining with crumpets."

Dick shook his head heavily. "Porky Williams, if you hit my sister with that stick again, I'm gonna fasten you to a filament connection, connected all wrong, and Snaith should have known better, don't you fly well?"

They separated, and started off in opposite directions, each apparently satisfied.

Then Dick stumbled, just as Johnny was coming down to take the situation in hand with a few mild shocks—or so it seemed, from the position in which Dick suddenly saw him. He had come within an inch of Dick's helmet, but now he backed up quickly, and jerked downward to the thing which Dick's shoe had touched.

It was a stake with a metal flag on the top, and it said that Henry Simonoff was taking claim to this.

Dick looked up slowly, studying the landscape. Then he let out a yell, and twisted over the valve on his oxygen tank, until the musty air was whipped away, and his head was clear again. He spotted Charlie wandering on, with a smile wreathing his face, and took out after the old prospector.

But Charlie seemed to have guessed that his separation from Dick

was wrong. One of his fingers had already touched his oxygen valve. Now he looked up as Dick reached him. Reason was back in his eyes as he followed Dick's pointing finger.

Five hundred feet away, a small dome that might house fifty people stuck up from the ground.

They headed for it, without making any useless remarks, running as fast as their weary legs would carry them. But long before they reached it, they knew part of the answer.

The dome was empty. It must have been used at one time, but now it had been idle for months.

It wasn't a hasty evacuation for the storm, with most of the supplies left behind, but a real desertion. And that meant that there might be nothing left inside.

But they couldn't tell until they'd tried it.

Chapter 13 Hope and Despair

There was air inside, as they found when they pulled the lock shut behind them. It clanged with a sound that could be sent only through air. They exchanged glances, and began pulling their helmets off, cutting the oxygen circuits out first.

It was breathable air, sweet and rich after the stale stuff from their tanks, and they stood gulping it in. Dick began to yank off the rest of his space- suit, and stood finally in his normal street clothes, twisting about for the luxurious feeling of having

nothing to hold him in. He wanted a bath and a bed. But mostly he wanted air against his skin, and nothing else.

Charlie had stripped his suit off, too. They hung them near the airlock, and the older man nodded toward a small section in the center of the little dome. "Hydroponic garden, and still growing, though it's in bad shape," Dick agreed. "No wonder the air is still good. Hey, Charlie—food!"

The food wasn't as vital as the air had been, but they had been fasting long enough and living light before then. They moved back to the gardens, to find tomatoes ripe and some melons that were almost

ready. It wasn't the richest meal in their lives, but it was satisfactory enough. The melons were rich in sugar, and the tomatoes in minerals and vitamins. What more could they want?

Charlie investigated carefully as they went along, but they could see no sign of the reason the place had been deserted. "Must have been some scientific work with the silicone beasts," he decided. "At one time, Earth went crazy about that, so they probably sent a staff out. Plenty of money behind it."

Dick nodded. The place was tiny, and built with a single house and garden center sort of plan, rather than the separate dwellings to be found in the larger domes. But it had been as well equipped as a place of this size could be.

They found beds made up in one room, though most of the sheets had been taken away. Dick thought again about a bath, but he was too tired. After the worry, he couldn't even think about such necessary things as air any more. All he wanted to do was to lie down with no suit over him, and sleep like a human being.

They explored the place more thoroughly in the morning, when their heads were clearer and they could concentrate on the real reason for their trip. They began by looking for some means of communication, but there was none. That wasn't surprising, of course, since many scientific studies were done here without radio communication.

Their main interest was in finding a few tanks of oxygen and a couple of spare batteries with which they could resume the trip to Relay Station. But both of these were missing. The air inside the dome was all there was—and when that leaked away, there would be no more. Tanks had been connected once, by the looks of things, but had been taken away. And there wasn't a trace of a battery in the place.

"Must of come from Earth, all right," Charlie said hotly. "Pull up and leave a dome—and no supplies in case a man gets stranded here, like us! You don't find any Mercury men acting up like that, Dick."

Dick had to agree. It was customary to leave air and power in anything that was big enough to contain it, in case of emergencies. Men never completely abandoned a dome—except men from Earth, as Charlie had indicated.

But they did find a map, on which they located themselves, and also Relay Station. The station was to the south of them by a distance that would take about fifteen to twenty hours of hard hiking— and

they had air enough for perhaps ten safe hours in their tanks.

"Looks like Johnny slipped on this one," Charlie said. "Gotta give him credit for trying, but he missed it."

"Maybe not," Dick protested. But he could find no reason for his arguing, except that he couldn't blame Johnny for not knowing the exact contents of all the domes on the planet.

After an hour more of searching Dick had discovered four empty oxygen flasks, hidden under a workbench and a tiny electric tractor that used huge, useless batteries, and which would go about as fast as a man walking. The batteries were still charged, and the machine was usable—but at no more than four miles an hour, which still wouldn't take them to Relay Station before they ran out of air.

They were staring at it in disgust when Johnny came in—or rather, staggered in. He looked sick now, and nearly all of the pattern was missing from his surface. The domes here were not coated with metal, since it was too far from spooks and the heat was never that high. But he seemed to make an effort to come through the wall. He settled over the top of one of the several bulky batteries. At Dick's nod, he dropped down, but sucked out the electricity slowly, as if trying to make sure that none was wasted.

It was a help, obviously, but he still needed a lot of building up, and he knew it. He darted forward several times and came back to circle their heads. Then he gathered speed and went sailing out through the wall of the dome, heading toward the center of the hotside.

His work had been done, though, and Dick knew that he'd already come much further than he should have. He'd wasted his strength to the limit, and had somehow found them a place where he thought they could accomplish their purpose. It was no fault of Johnny's that they were as much failures as ever.

Charlie had been staring at the map he still carried with him, with this place and Relay Station marked in red. Now he spread it out on the little tractor that Dick had been studying. "Can you get more speed out of that diing, Dick?"

Dick shook his head, and the other nodded. "I thought so. Then there's only one chance. And it isn't too nice a one. It'll depend on luck. What we short of, anyhow? Oxygen. Power enough, at least here in Twilight. We can get along without a lot of it. But we can't get along without stuff to breathe."

Dick nodded. Charlie pointed to the map, and drew a line straight out into the section that was always facing away from the sun. "Then there's where you can find oxygen—ifEen you're lucky. It's frozen out there. Every bit that this planet ever had went drifting over there and froze solid."

Dick began to see what he was driving at. They had the four empty tanks, and there was the tractor—useless for any speed, but capable of carrying them along with a fair load. He measured the distance to the line that was marked "Frozen Waste," and compared it to the scale below. It came out to about fifty miles, which would take a good twelve hours of traveling.

"I've been there," Charlie interrupted his thoughts. "It ain't that far —you come to scattered bits first, then this stuff where they got the line marked off. Iffen we're lucky, we hit oxygen right after we get out of the twilight belt. T'otherwise ..

Otherwise, Dick thought, they would freeze to death, which would be better than dying of lack of oxygen. Out there all they had to do was open their suits, and the bitter cold would creep in . . .

He shook his head, knowing that they were still only half functioning. They were so poisoned by the fatigue of the trip and the complete hopelessness that had suddenly come to an end, without any real solution, that their minds were unable to focus on anything. Charlie kept knitting his brows and trying to work something out, but it was obvious the vague ideas in his head were as thick as those that Dick had.

There was one idea which might work. And right now they had to try it. With ten hours of oxygen apiece and with enough power for the little tractor, it was worth die gamble. If they made it, they could ride on in fair comfort to Relay Station, and even exist there until help came if they found it deserted and with no air.

He nodded slowly, and Charlie carefully put the map away. Dick was still thinking of a bath as he followed the older man out to make another meal on tomatoes and melons, but he knew that there wasn't water enough here in free form—and there wasn't time, either. How many days had it been since they left?

He asked Charlie, and received a startled look. "Why, it's ... by golly, how long ago was it? I can't recollect rightly. About ten days, I reckon."

It seemed to agree with the vague time sense in Dick's head, but it

might be wrong by a day *or so. And* Sigma dome *had given* a maximum of two weeks before they left! For a moment Dick felt guilty about the sleeping and loafing they had done here in the tiny dome; yet he knew that they might even save time by relaxing another day. Then the urgency that lay behind this long trip hit him, and he rushed through the simple food and got up quickly.

Charlie seemed to catch the feeling, and they wasted no more time. The little tractor rolled out. It was nothing but a platform with two simple caterpillar tracks under it, without a dome built over it. They could only ride it in their suits. But it would carry the empty oxygen tanks out, and— with luck—the full ones back.

They took another look at the map, but found nothing that was useful. The simplest method was to cut straight east, directly into the darkside. According to the map, there was no really rough going that way to slow them up.

They dug out the tanks and put them on behind. Then Charlie made Dick stop while they found a shovel among the tank-farming tools, and something like a big funnel. “Wouldn’t do a mite of good to go trying to pick up oxygen with your hands, Dick,” he said. “We can get into enough trouble without that, by jingo.”

They climbed into their suits, feeling almost at once the stuffiness they had associated with the last. But it was only the heavy scent of their own bodies, too long inside the suits, Dick knew. And after a few minutes, it didn’t bother them much.

Then the tractor rolled slowly through the lock and headed west, toward the section of Mercury which had never seen the sun and which was as cold as the other side was hot.

They would find no life there, Dick knew. All life operated on the use of energy, and there simply wasn’t enough energy in any form on that side for even the most crude and primitive living thing.

Twilight belt was only a narrow strip, and they were already well inside it. Now the sun sank lower and lower on the horizon, until it touched the surface of Mercury, and began to dip below it. They were leaving Twilight. A little later, Dick had to switch on the head lamps of the little tractor. The sun was gone from sight, and they were in deep darkness, with only the stars shining down. He’d been shown the stars first when he was ten, and he’d been afraid of them. But now they no longer bothered him. He glanced up . . . and jerked back to his driving as the little machine slipped one track into a gully, and

lurched, almost throwing them off.

They had their radios off now, to save energy, though Charlie thought there was enough of that. But taking precautions did no harm.

There was something white under the treads, and Dick looked down in surprise. He guessed what it was—frosty crystals that must be the first bit of ice or frozen air. But there was no time to waste on that. They had to get further in, where the chances of finding oxygen frozen solid for their use would be improved.

Driving was getting harder, and Charlie came up to relieve him. The old man set a straight course, and followed it with only a few slight variations. The ground seemed to be smoother here than it was on the hotlands.

Dick had time to study this queer half of the world now, but there was very little to see. As they went further in, the crust of white deepened and became solid, like the ice Dick had seen before only in the refrigerating units. He'd read about it, but it still seemed strange to think of ice that was measured in feet of thickness and spread over half the world.

Charlie leaned back to touch his helmet to that of Dick. "Should of found some by now. How much time you got left on that there dial?"

Dick glanced down, and studied it, moving around where a bit of leakage from the back of the headlights would illuminate the oxygen dial. "Two hours," he finally said.

He hadn't realized that they had been traveling that long.

"Then we better find it soon, or our luck runs out," Charlie said. "Guess we'll just have to keep a-looking."

They rolled on. Oxygen would have a bluish color, quite unlike ordinary ice. Dick had seen the laboratory product, since they sometimes had to freeze a specimen from the mines to determine all they wanted to know about the way the crystals were formed. But the solid oxygen he had seen had been in tiny amounts. He wasn't sure he could recognize it if he saw it lying right in front of him.

An hour later they were still further inside the darkside country, but the terrain had changed only a little. Now they came on clumps and hillocks in the ice, and Charlie began to knock bits loose with the shovel. They went on, the tractor slowing a bit as it found rough

going.

“We’ll be hitting the section where it begins officially soon, won’t we?” Dick asked.

Charlie switched on his radio, apparently changing his mind and tired of bumping helmets. Dick reached down to turn on his set, and found that it was stiff. He’d forgotten that the suits, while designed to be universal for either extreme heat or bitter cold, had been serviced for use in the hotlands. The greases used had never been meant for the darkside conditions.

Then it snapped on, and he heard Charlie’s doubtful voice, “I dunno, Dick. Them lines on the map don’t mean much. The men who put ’em there mostly just made ’em look pretty. Out here, they ain’t no sure way to say where something begins and something else leaves off. She just sort of slides around. But we sure should of hit her by now.”

Dick took the shovel and began knocking at the little hummocks that stuck up. Charlie caught his arm, and held it back suddenly. “Take it easy, Dick. Don’t go pushing yourself here. Gets so cold steel is just like glass-brittle, breaks like nothing you ever seen in metal. Crack her gentle.”

At the extreme limit of the headlights, a low cliff stuck up, and they went crawling toward it. It was perhaps fifty feet high in one place, and sloped down to half that in others. Dick decided that it was probably what was meant by the line on the map.

Charlie let the machine chum along toward it, glancing down at the dial on his oxygen tank. Dick checked his own, and saw that it was good for only about fifteen minutes more. Their luek, it seemed, had about run out—either that, or it was waiting like an Earth-panther to spring after they'd gone past!

The tractor came to a stop, and the cliff lay directly ahead. Charlie turned the lights up and down and back and forth along it. But there seemed to be nothing which gave forth the color and gleam that they knew belonged with frozen oxygen.

"Might as well have a good look. Might be our last one at anything,” Charlie said. “But keep your eyes peeled sharp, Dick. Never can tell when you'll find what you need. Lot of times things turn out all right just when you’ve up and decided you’re already a dead dog.”

His voice didn't sound confident, though. Dick climbed off the tractor, just as the alarm bell on his tank rang. That gave him five minutes in which to change to a fresh one—and there was no fresh one to change to!

A minute later Charlie's bell also rang. And they were standing squarely against the cliff. The old man took the shovel and struck the handle against the stuff, first lightly and then with a ringing blow that chipped off a few fragments.

Dick looked up. For a split second, he stood speechless. Then he jumped forward and grabbed Charlie, pulling him violently to the side. He'd seen fragments at the top suddenly topple and begin falling toward them, sending out more broken bits as they came tumbling down.

It fell within a few feet of them, but only a fine shower of dust actually touched them. Then it was over.

And it hadn't helped much to pull the old man away. They had perhaps a minute left.

Chapter 14 The Silicone Beasts

Charlie seemed not to know that the time was drawing near. He moved over to the splinters J that had fallen and picked one up. For a moment he studied it and then came leaping toward the tractor, his legs suddenly pumping with the last energy reserves he had. He hit the splinter with the shovel, and yanked Dick to him.

Dick had guessed it before he felt the connection on his oxygen tank suddenly opened. Something had looked right to Charlie, and the old man was going

to try it, at least, before they were dead. He felt a brief suck of air from his suit, before the automatic seal worked. Then die big splinter dropped into the tank, and Charlie was screwing the tank back on, and cutting on the little heater switch that would warm the tank.

A man could live for a couple of minutes in his suit, even without an oxygen supply, and Dick had no way of knowing at first whether it had worked or not. But Charlie wasn't waiting. He began yanking his own tank and stuffing in splinters of the ice that had fallen—and which did have a peculiar blue color, now that Dick looked more closely.

They waited, for at least five more minutes, before the old man looked up. “Might of known it’d be way up there, Dick. And don’t you ever let me hear you say anything against luck. None of us would’ve lived here without it, when I was a kid. And I guess it ain’t changed much, at that, by golly!”

There was enough in the fragments that had fallen. They had to break them up, and Charlie warned him against handling them too carelessly, since concentrated oxygen in any form was powerful stuff. Then they began to stuff them into the tanks, filling each loosely through the mouth of the flask. As soon as two of the former empties were filled, they switched to those, and began filling their old flasks.

It took less time than Dick had expected. He had taken Charlie’s idea of the funnel for granted, and had expected to have to melt the stuff and pour it in. But the tanks had been equipped with mouths big enough to get a fail* splinter through, and it had been simpler to do it the easiest way—and probably more effective.

Charlie backed up the little tractor and swung it around, while Dick hopped on behind. They made better time back, following the path they had worn smooth on the way up. But their new supply of oxygen wouldn’t be all gain. By the time they got back to the little dome, they’d have only two tanks left.

Dick suddenly yelled, and Charlie ducked, then swung around. But it had been only an idea that finally hit the boy. “Charlie, this was all waste. Why couldn’t one of us have taken both tanks before and gone on to Relay Station? That would have given one man twenty hours, which should have been plenty!”

Charlie gulped. He didn’t even answer, for at least half a minute. “Because we got too busy looking for the trees,” he said at last. “We couldn’t make out the forest, I reckon. Get a figure running around in your head, you don’t let go. I knew I was good for ten hours. So ten hours was the oxygen we had! Sure you’re right. But it ain’t any time to worry about what we might’ve done, Dick. Main thing is, we’ll get to Relay Station.”

He shook his head at the stupidity they had shown again, but he wasn’t letting it get him down. And after a few seconds Dick followed his example. What was done was done—and maybe it might even work out better, somehow.

They didn’t spend much time in the little dome, this time. They went in, ate quickly without taking off their spacesuits, and switched

to a fresh battery for the tractor. It could make no more speed than their maximum, but at least it was more comfortable than walking.

They were out again in half an hour, and heading for Relay Station. Dick looked up at the sun, which was now apparently up again, though still close to the horizon. Relay Station lay south and west, and there was no route shown on the map as being the best. He put it away, and went to take over the control of the tractor, to let Charlie catch a nap.

Then they rolled along at a fair speed, with the ground more level than Dick had expected. He hunched over the controls, his eyes on the course ahead, only glancing back once in a while to see that Charlie hadn't thrown himself off in his sleep.

It was on one of these occasions that he spotted something behind, slinking out of sight as his head turned back. It disappeared too quickly for him to make out any specific shape, but he knew it had been real, and not a trick of his eyes.

The next time, he jerked his head back suddenly. This time there was a brief glimpse of something that was a dull gray, smooth and slippeiy, and about the size of a small horse, judging by the pictures he had seen of horses. But it slipped out of sight almost instantly, flattening out and sliding toward the side, where a bunch of rocks gave it cover.

Then there were two of the creatures. And after that they began increasing steadily in numbers. There was no longer any doubt but what they were following the tractor.

Dick had heard of such monsters, but had put them down mostly as tall tales told by travelers and prospectors, since no one he knew had actually seen the things. They were natives of the twilight belt, according to the legends, and never strayed far from it. Their basic structure was made up of silicones, like the plastic of the robots. On most worlds that would have been a poor second to the regular carbon compounds, but Mercury was a special case.

Men had discovered the silicones quite a while before. They had found that they could build up compounds like the carbon compounds by using silicon and oxygen—the so-called silicone combination—to replace the carbon. The result had been a group of chemicals from very thin oils to heavy plastics, not too much unlike the carbon chemicals they resembled. But where carbon gave substances that could stand only a little temperature change, silicone compounds

seemed to remain the same through the widest general extremes of temperature. And these limits had been improved through the years.

Yet nature apparently had found the same ability to stand sudden changes in temperature an asset here, and had built one of the two types of life on Mercury on the basis of silicones, instead of the usual carbon-compound flesh.

Or he was about willing to believe it was an actual truth, instead of a mere fable. Certainly the things back there had no resemblance to any of the Earth forms of life, and they were even further from the will-o'-the-wisps like Johnny.

Now they were gaining a little on the tractor. Dick argued with himself for a few minutes, but he wound up by waking Charlie.

The old man turned his head around in answer to Dick's pointing finger. He nodded slowly, as he collected his wits.

"Silicone beasts," he acknowledged. "And they're nasty things, at this time of the year. On the other cycle, for some reason, they're completely harmless. Makes it kind of hard for most people to believe the stories they hear. Probably most of 'em are true."

"And what do we do about it?" Dick wanted to know.

Charlie shrugged. "Hope you can outrun 'em, which means that they ain't too curious about you. Sometimes they just seem to stay like that, not moseying any closer. If that's no good, then you do anything you can to chase 'em off. Might slip into a bunch of rocks with one of the batteries. Give 'em a good scare with a jolt or two when they stick their snouts into our business. Might work. Might not."

For a while longer the beasts followed along at the same distance. They were ugly things, almost formless. If they had bones, they were strange bones that could bend at will. And they seemed to put out feet at will, or to flow across the ground without moving a muscle.

"Best you catch a wink of sleep," Charlie decided. "I can watch 'em. Been chased by 'em before. You betcha."

Dick tried it, but he found himself unable to get to sleep. He kept lifting his head to catch the creatures in their change from one form of locomotion to another or to see if he could count them. Since some of them were usually sliding sideways out of sight, while others more bold ran over their fellows, it was a hard thing to do. He finally

estimated that there might have been twenty of the tilings, some no better than a foot in length, others ten times that size.

Then the creatures began to gain. They seemed to move no more rapidly or consistently than before, but the distance shortened. Even as they drew close, it was hard to decide whether diey had some basic fonn or not.

Now Charlie began to worry. The creatures wouldn't eat a human being or even deliberately kill him. But they were filled with a slinking kind of curiosity and were perfectly capable of mashing a man to a pulp while sniffing him over to see why he acted as he did. They were fairly unintelligent, as far as could be determined.

They were within fifty feet when Charlie gave up. "Keep an eye out for a good place to hole up," he told Dick, and he was following his own orders already. "Place too narrow for 'em, just wide enough for us. When you see it, shout."

They were hugging the edge of a rocky section now, and Dick swept his eyes along it as they passed, but most of it seemed to be open, and of no use as a hiding place.

Then he clutched the old man's arm. "Over there," he said. A bunch of sharp rocks stood up *77ie Silicone Beasts 181*

on end, forming an outline that suggested there might be a circle inside. Outside, the entrance was narrow—almost too narrow. It was open to the sky, probably, but that wouldn't matter.

Charlie swung the litde tractor at once and picked up one of the tanks of oxygen. Dick followed his example and got ready to jump. The tractor came alongside the place, and Charlie stopped it. He got off and waited for Dick to squeeze through the narrow passage. Then he managed to squeeze through himself. He reached out and shoved the tractor out of the way, and sat watching.

The beasts drew up in a circle. Some of the smaller ones could have slipped through the spaces between the rocks around the two men, but they seemed as baffled as the others.

Charlie shrugged. "Dunno. They just act that way. Seem to figger they're all the same size, and that's the same as the biggest one among 'em. Until the big one goes through, none of the rest will try."

Dick considered their oxygen supply thoughtfully. There was no reason to worry yet, but they didn't have enough to permit them to

wait out these beasts if the things decided to make a siege of it. Charlie had no idea of how long they would wait. They'd been known to leave in a few minutes, and there was one case where they waited for over three weeks.

The old man found a fragment of rock and settled back against it to try to sleep. Dick waited to be sure that it was real sleep, and not an act to get him to stay back while Charlie did some fool thing to the beasts. Then he found another rock for himself and managed to fall asleep after half an hour's worrying.

Once he woke up to see something that looked like a bad attempt to squeeze a face out of putty stuck against the rocks. It was a naturally ugly head, and the way the creature was wobbling something that might have been its lips made it even uglier. He shuddered, before he saw that it was much too wide to squeeze through. And the picture of the thing in his mind didn't help his next attempt to sleep.

The next time he snapped out of his nap was when one of them suddenly slapped a tail against the earth and charged angrily at the stones. They stood up under the assault, by some miracle, even when it kept repeating it. But the ground shook each time the tail slapped down.

The strange part of it was that any one of them could have come through by turning sideways and flowing through, as they had flowed across the ground behind the tractor. But this seemed to be against the rules, for some reason.

Dick got up and moved around, working off the numbness. At his first movement the creatures drew back out of the way. He noticed that when he moved toward them, they started going around to the side. When he stood still, they moved away. But at any other movement, they tried to come through the rocks toward him. It all fitted the legends he had heard, and it was no easier to believe in person than it had been when it was nothing but an idle story.

He saw Charlie watching him, and went back. "I don't get it," he admitted.

"Why should you?" Charlie asked. "You think of 'em as animals. But they ain't—they're just a bunch of walking plants."

"Plants?"

"Yep. Move to the darkside, get themselves some water. Move to

the hotside, grow a while. Then wander around in Twilight, giving anyone a hard time. Had a motion up before the Governor once to get rid of 'em, lock, stock and barrel. But he hemmed and hawed around until it got dropped." "Do they ever kill anyone?" Dick asked, eying their huge bulks.

Charlie nodded. "Now and then. You best get some sleep, boy. We may have to break through 'em, after all."

The more he heard of the things, the more cockeyed they seemed, and the less likable. Dick hunted a corner out of sight of most of the beasts and turned his back on them. He could still feel their tails thumping the ground once in a while, but he refused to look at them.

Then, to his surprise, he fell soundly asleep, without any dreams.

This time it was Charlie who woke him. The old man put up a hand, as if to his lips. "Shh. Something funny going on, I seen something sneaking up behind, over there. And I never heard tell of silicone beasts climbing up a rock. Watch."

Behind them there seemed to be a flicker of movement, but Dick couldn't be sure. He moved forward cautiously, with Charlie at his side. Again, a bit of movement caught his eye. It was a dark object, dangling around a rock, and seeming to be clinging on firmly.

Side by side, they moved toward it.

Now suddenly, it moved again, and the two men gasped. It looked like a hand, or the arm of a spacesuit thinner than any they had seen before. And as they looked, the top of a head groped up above the rock for a brief second, and then collapsed again.

Dick jumped forward. As long as it wasn't a silicone beast, he was willing to take a chance at this stage. He moved over the rocks. The object had disappeared now, but he went on, sliding in among the boulders along that side. Finally he was

standing between the two rocks where he had seen the hand.

He looked down, and his voice caught sharply in his throat. He heard a mutter of questioning from Charlie, but he was too stunned to answer. Instead, he reached down his arm.

It was real, all right. His space mitten was caught at once. Dick heaved, and there was a scramble on the other side.

Then, finally, the robot was coming over and into the enclosure

with the two men. And the robot was the same Pete they had left burned out back in the hotlands!

Chapter 15 Battle of Monsters

Charlie stared at Pete, but the robot suddenly | seemed unimpressed with his reception. He sat down slowly on the rocks, and then slumped over completely, falling over on his back. Dick bent to pick him up. Then a bluish glow came out of his head, and a wispy shot out. Dick let out a sharp cry. “Johnny!”

But the wispy behaved wrong for that. It simply hung in the air, waiting, making none of the bobbing motions that Dick had come to associate with his pet.

Another glow appeared, and a second wispy shot up from Pete's head. It was immediately followed by a third. And finally, two appeared together, separating as they shot away from Pete.

One of those danced around Dick’s head, and this time his shout was answered by more bobbing, while the other four wispies gathered around in a half-circle, seeming to stare at the two men.

Charlie stepped back, shaking his head inside his helmet. “Now I've seen everything,” he said at last. “Dead robots that go walking around, wispies all mixed together. ... I might as well be on a real ripsnorter, Dick. Nobody'll believe a word I ever say.”

But Dick was watching Johnny, who was slipping back into the head of the robot. Pete sat up weakly and put out a hand, as if asking for help to sit up. Dick helped, bringing the back up straight, and letting the robot support itself against one of the stones, It motioned with its hands toward the chest plate, making motions as if taking that off. “Bad here,” it said. “Burned out connection.” Dick frowned, wondering just how much of the automatic and nonautomatic response circuit of the robot the wispy could handle. But if it could feel electricity, which was logical for such a creature, then there was no reason it shouldn't know what it was saying. Behind him, he heard Charlie gulping, but he had been surprised before that Johnny hadn't learned to make the robot talk. It would be pretty crude, of course, since the machine had a small vocabulary. But certainly talking was no more problem than walking.

Or maybe it was. Maybe getting all the routing circuits straightened out had taken a lot more time and practice, and Johnny had been working on that whenever he got a chance until he had finally learned the trick.

He found the hinged part of the chest plate and threw it up, taking out the little set of tools that came with the robot. In a few minutes more, the chest plate was entirely off. But he had no idea where the trouble lay.

Something spat, and the robot jerked. It spat again, shooting out little sparks. And now he saw it. One wire, high up in the chest, had been burned through and wasn't quite touching. He twisted it together with the little pliers, knowing that a good job would have to wait until later. But the voice came at once.

"Good, Dick. Hard to make power jump break. Now Pete is okay."

It was a pretty clear explanation. The robot had been damaged only by having the main power line broken, and the wispies had found that they could short it just enough to keep the machine working.

But it didn't explain how they had found him, or why they had bothered bringing the robot. Then he realized that the speech itself had given the reason. To communicate, they had to have Pete.

He put his other questions, and Pete's voice did its best to find an answer. It seemed that the wispies had been on the constant watch for Dick, but they had been forced to do it in relays, changing off while the exhausted one went back to the hotlands for more energy. Then, when they had found Dick at last, they had come together in Pete.

Well, he had no idea of how much help they would be, but they had found him in a tight spot again. He pointed out the silicone beasts to the wispies, but he doubted that they could help much.

He wasn't sure what their reaction was when he finished, but the robot nodded faintly. "All work," it said. Then Johnny came out from the head, and Pete got up on his own power, now no more than a normal, old-style robot, waiting orders.

"Better do something pretty quick," Charlie suggested. "Those things out there seem to be riled up by your pretty little friends. Been yelling for blood."

They weren't exactly yelling, but the silicone beasts were definitely thumping. Their tails were beating the earth, and they were leaping at

the stones around with renewed fury. Something had *set* them off, and it might have been the arrival of the wispies.

One of the stone shafts that had made die little enclosure suddenly cracked sharply. The gap left wasn't quite big enough for the head monster outside, but it was a good beginning, and the silicone beast went to work with more enthusiasm than sense. Its head changed shape with every blow it delivered to the next stone, but that seemed of no great importance to it. The stone began to crack.

Dick and Charlie moved forward, knowing they couldn't do much at this stage, but feeling obligated to make the attempt. Dick added this to himself, feeling sick with fear; but he couldn't show it in front of Charlie. Going against the great beasts out there seemed something like trying to chase an elephant back with a fly swatter.

Then five blue streaks shot through the air. They seemed completely sure of themselves this time, unlike the battle they had had with the demons. They singled out the leader of the monsters and flashed down at the base of what served as his neck. There was a sudden wild threshing of the beast's tail, and all four wispies flashed out at the end of it. The big monster quivered slightly and began to flatten out. He started to slide sideways— and then went into a complete retreat, sliding under the feet of those behind him at a steady, unchanging pace.

One by one, starting with the largest and working down, the wispies were repeating the tactics. At the base of the neck, out at the end of the tail. Whatever they did must have seemed horrible to the monsters. As the wispies left their bodies, they also began sliding backward. Then the larger beasts were all taken care of, and only the babies remained. They seemed to receive milder treatment, since they were attacked by only one wispy at a time.

In less than five minutes, the horde of silicone beasts had disappeared, and the wispies came back. But as usual, in their activities so far from their chief source of energy, they had been drained more than seemed good for them by the activity.

Johnny seemed weakest, probably because he had been in chief control of the robot.

They grouped up now, and four of them suddenly flashed at another. Dick couldn't be sure, but it seemed logical that Johnny was the middle one. In any event, the four seemed to drain themselves to the limit, while the fifth wispy grew fatter, and began to swirl

properly again.

A second later the four were streaming away, obviously badly in need of nourishment.

Johnny slipped into the head of Pete again, and the robot seemed to take on personality almost at once. He climbed out of the little enclosure, got onto the tractor, and backed it up for Dick and Charlie to mount. Without a word of instruction, he seemed to have grasped its principles. And while he was a long way from being a smooth driver, he seemed to be doing well enough.

He was obviously bound in the right direction, which wasn't too surprising, since that had been their planned line of march.

Charlie stretched out, yawning inside the suit. "Dunno what you plan to do, Dick, but I figger on catching the rest of that shut-eye. Johnny there seems to know what he's doing, and we got some time to kill."

He turned over on his back, and began snoring within a few minutes.

Dick sat up, trying to think. He had had all the sleep knocked out of him, and was beginning to think that there was no real sense to anything. This whole trip had been crazy from the start. Two men and a wispy—with everything thrown in for good measure, and very little balance, it seemed to him. The silicone beasts left him slightly sick, and yet he couldn't help feeling sorry for them. They had obviously been such easy marks for the wispies.

There were more of them along the course they were traveling, but none seemed to take the initiative to start trailing the little tractor. Apparently they worked only in herds. One would start something, with as little reason as possible, and all the others would begin to join in.

He looked at the map again, wondering how much longer it would be before he'd reach his goal. It didn't seem possible that the trip ever could end. Like Alice in Wonderland, he expected to find himself tumbling head over heels down another stairway or through a rabbit hole the moment he turned around.

The first sign he had that they were actually near the Relay Station was a sudden movement of the robot that jerked Dick's head up. It had switched from two hands to one, and the result had not been good for the tractor. It struck a rough section, bounced, and then

finally crawled back to a steady pace. But Pete was pointing, and Dick followed the direction of the finger.

There was a larger dome, this time. Again, it had no layer of aluminum over the plastic, and it seemed almost like a ghost dome to Dick, who wondered how people could live inside a transparent dome. But the main thing was the knowledge that at last he was 011 the final lap and about to be of some use to his family and people instead of merely to robots, wispies, and assorted other creatures and life forms.

Then the tractor sputtered and began slowing down. Pete fussed with the controls, but it did no good. The battery had given up its share of electricity, and wanted to rest. And the tractor couldn't do anything about it.

Charlie woke up with a start, and spotted the Station. He nodded. "Sure deserted. Well, reckon we don't care what it's like, just so it gets us through to East Twilight. Come on, shanks' mare."

He began walking toward it, with Dick at his side and the robot in the rear. The buildings were not only deserted, but some were apparently beginning to fall to pieces. Only the big radio shack in the middle still seemed intact, and that was the main interest to Dick. If the radio worked, the town could give up the ghost immediately afterward, as far as he was concerned.

The lock had been fixed, at least. They opened it and went through, with Pete still carrying the wispy inside him. Then they went down the dead streets.

"Scientists from Earth killed it," Charlie complained. "They never can leave things for our boys here to work out; they have to come over and use what we build, ruin it for any use, and then leave it like this. Shame. Five hundred people can live here. And they don't, because our government doesn't have money to make up for the damage done."

Dick stared at him doubtfully. The speech was out of keeping with Hotside Charlie. The man shrugged as he saw Dick's eyes on him. "Forget it, Dick. Gets my dander up once in a while, I kinda get a soapbox. Used to have me an education when I was a kid, talked as dandified as anyone. Here, lessee what we got left."

They had come to the radio shack, and now Dick threw open the door. Once there had been a lock on that, but it had been tom off by someone who prized one of the oldest traditions of the planet—that

inside a dome no lock was ever needed.

Dick went inside, and his eyes gleamed at the machinery there. Without question, Relay Station had been given the best equipment. If any set could rouse East Twilight, this one should do the trick.

He stopped for a moment, to stare at an automatic sender that was on. It had stopped running, but he spun it through his fingers by hand, reading the message off the tape. There was nothing new about it; it was the same message Charlie had found on the rocket ship—a message to all domes to abandon anything outside of Twilight and to go to East or West Twilight for the duration of the storm.

Dick reached under the table for the power switch that should be there. His fingers jerked forward to flick it on, and then he frowned. This time he found it, and realized that it had already been shoved all the way forward. So, maybe it worked in reverse. He'd seen other cockeyed jobs with switches. He shoved back, but again without results.

For a second more he frowned. This time he threw up the control panel and began juggling the switches, trying to read the meters as he tested it. But the meters all remained on dead zero, indicating that nothing was going out or coming in.

He followed a cable from the table across the room and to another tiny room that lay behind the false partition at the rear.

The most advanced batteries lay there, all connected properly, and with no cut-off switches between. Dick refused to believe his eyes, but he tested the batteries dully. They were drained dry. With the machine on automatic, it had been left to run on, sending out its signal as long as there was juice enough to drive the tape repeater. And now it was silent only because it hadn't the power to repeat the message again.

He saw the telltale coupling that spelled power from sun-cells outside. These little devices could be installed on the roof, and they would then turn the radiated heat of the sun directly into electricity. In a week or so, they could have raised the level

of power up to a kick sufficient for Dick's purpose.

But there was no time to wait for that.

At Dick's request Charlie went through the building and then took off for the rest of the dome, while Pete with Johnny inside scurried

the other way. This was a good-sized dome, and there would be batteries around. If not, there should be an atomic boiler and generator.

Dick found the latter two himself, where they belonged. But the slugs had been pulled from the pile, leaving it inactive.

Both Charlie and Pete came back with a single word: “No.” Whoever had last been in the station had felt that more power was going to be needed elsewhere and had gone about stripping the dome deliberately. Charlie angrily denounced the type of men coming into the planet now—no better than Earth lawyers and undertakers, in his own words. But his anger and Dick’s bitter sense of loss couldn’t give power to the dome. For power they would have to cut off the automatic sender and then wait a week while the batteries charged up enough to handle a full load to East Twilight.

A week. And he had no idea now whether there was one day, or three, left for Sigma dome. But he was quite sure that it couldn’t hold out for a week.

Chapter 16 Demon Power

Pete laid a hand on Dick’s arm, and the boy jumped. It took time to get used to a robot that could act like a man, even when he knew that something a thousand times as alien as a robot was inside it. Or was Johnny alien? Was any intelligence really alien?

“Sorry,” the flat voice of the robot said. “I have tried.”

Dick blinked a little at that. The words had never been in Pete's vocabulary. No robot knew the meaning of “I,” and the grammar was stripped to the bone. But he supposed Johnny had his own

ways, once he'd solved the puzzle of the speech circuits.

Then the first bit of a wild idea crossed Dick's mind. “Johnny,” he asked. “Johnny, your people can suck energy from batteries, can’t they? And you can give each other the energy. Suppose you shot energy into a battery? Would that work?” Pete nodded. “It would work, Dick. But . . ." He left it hanging, while Charlie stared at him. “Seems to me you spooks pick up English mighty fast, Johnny,” he observed. “Yesterday, no English. An hour gone, robot English. Now you get fancy. How come? Or d’ya get a charge out of pulling monkeys out of lampshades?”

Pete looked at him then, and this time the nod was slower. “I heard that expression forty years ago, Charles Hennessy—when you were lost once.”

The old prospector’s face jerked suddenly. “You!” “Me,” Pete answered ungrammatically. “I was always the one, because I conceived the great idea of contacting the human race. For forty years I worked on your language, learning it. I tried to find ways of sending it through your radios, but I could not modulate it. Now, through a system of relays in a robot's body—an old robot, not a metal one—I have found the trick of how sounds are put together in this way.”

He paused, and thought for a minute. Then he shrugged. “I have become, I am afraid, more human than will-o’-the-wisp. And it has not been easy, when humans have hated us.”

Charlie had had enough, but Pete sighed, almost like a man. “You gave me this idea, Charlie—when you asked for something I knew you wanted, and offered me something you knew I wanted. I began to see that you had a purpose to the noises you made. And that you men of Earth were not all monsters, like the silicone beasts who once had brains, until they felt they could make us slaves. You were a good man when you were a kid, Charlie—and by golly, you re not such a bad old duffer nowl”

“What about me?” Dick asked. “You may get a kick out of kidding Charlie, but I was asking a serious question!”

Pete shook his head. “No. Dick, you don’t know what you ask. It would take many of us to recharge your batteries, and we would be weak after that. Dick, there are only eighty of my people left on all Mercury—eighty, against unknown numbers of demons. We can’t risk what you ask. I like you, and I’ve risked myself and my people time and again. But we can’t serve as living batteries. That is too dangerous. No! I came to your people for help, not to kill my race!”

Suddenly, the glow swept out from the robot, and Johnny snapped away into the distance.

“Mite talkative, ain’t he?” Charlie said. “But Dick, lie’s got a point. Forty years a-learning to talk with us so he can get some help against the demons and stop us killing off his people. And the first squawk out of you is for him to go make electricity ferryboats out of them.”

Dick shrugged bitterly. He’d known that he had no right to ask it. And yet there was nothing else to do. He needed power; and he probably needed it in less than six hours, if he wasn’t to find himself

without air again. There had been no oxygen tanks in Relay Station. Now Johnny, the last hope, was gone, angry because he'd had to ask too much.

With so few of Johnny's race left, between the constant war with the crazy demons and the ingenuity with which men had killed off good and evil alike, it had been too much. But he hadn't known.

He got up from the chair into which he'd sunk and tried to stop thinking about what was due to happen to all of them. But it didn't work. Charlie suddenly came over beside him, and the old eyes were suffering with him. There were some advantages to being human besides talking—and one of them is knowing when not to talk.

"Well," Dick said at last, "it seems to be finished, anyhow. But I'm glad we tried."

There was a sharp flickering, like a row of bullets of light shot out of a machine gun. When he jerked his eyes up, he was looking at a long line of small blue spheres spread around the room, and Pete was standing up again.

"My people," the robot said. "All of them—and with all the electricity they can find for now. Which batteries do you want charged, Dick?"

Dick looked along the lines of wispies. A sudden picture came to him. Eighty of them, heading back from here with only enough energy to get home. And a horde of the demons coming down on them...

He choked on his decision. Sigma dome was all he had ever had. Yet there were only seven hundred people there out of the millions and billions of men left in the solar system. And Johnny, who had only eighty left in a hostile world being stolen by demons and another race, had brought out his entire race to save a few of the men who had learned to kill them.

"Go on back, Johnny," he said. "Get out of here, and take them with you. Go out and sock some demons around with all your energy. Gang up on them. Only let me alone, will you? Let me at least have a little peace before things go the way they've gotta. Scram!"

"Dick," the robot insisted. "Dick!"

"Get out! I wouldn't even ask the demons to kill themselves off! Not even the silicone monsters! I don't want any blood sacrifices, Johnny

Quicksilver!" For a second the robot stood irresolute. Then it turned slowly. "Sometimes we can learn new things from thinking of the ways of another race. You have learned, Dick. Perhaps I have learned. We shall see." The flickering came again, then the wispies were gone. Dick turned his back to Charlie, and stood looking out of the window toward the sun that was low on the horizon, and still was leaping with great gouts of flame.

"You can go, too, Charlie," he said slowly. The false anger was gone from his voice, leaving it a faint wash of sound in his suit. "I'm sorry you had to hear me do that. I. .. oh, dam the whole mess . . ." Charlie sat quietly for a minute. Then he stood up. "Guess I know how you feel. But, well, I'm kinda glad I did hear that, Dick. And I'm just sorry your Dad couldn't have heard it and known what it meant. I got a feeling he'd have been right pleased. He ain't any less of a man than you are, Dick. Just remember that. And remember I'm a-thinking that's quite a compliment to him, too. You sweat it out of your system, and when you get done saying all the things you don't mean, you come down and I'll tell you why your grandfather went back to Earth ... and why I never did."

Dick moved back to the empty batteries that would never be filled, and to the automatic tape machine. He cut a message on it, pushing the keys down by hand—the message he had wanted to send to East Twilight, to tell them that Sigma dome would die without another rocket and to add that Hotside Charlie would die here in six hours without air. It was a useless message, but it wasted time.

Then he turned to leave the room and find Charlie.

But somediing was coming through the dome. He stopped and stared at the sight. There were eighty tiny blue balls of fury chasing about half of their own number of the larger spheres that must be demons. They weren't merely chasing them; they were herding them.

He heard steps running, and Charlie broke into the room, just as the first demon was driven forward. And now it was forced down with a furious exchange of tiny little bolts of electricity that came at it from both sides. It darted downward against one of the batteries.

There was a flash of fire, and the demon was gone. But more of the wispies were waiting with another. One at a time, they drove in the demons, and one at a time, the demons died. By the time the first lot was finished, others were being herded in.

"Seems like our friends learned something," Charlie said. "Seems

like Johnny took you seriously when you told him to gang up on them. And you know, I'll bet that's the first time the wispies ever really thought about going out with blood in their

eyes."

"You're right, Charlie," Pete said quietly. "We ran, but we never chased. We thought violence was abhorrent. We were polite to each other, and we each fought our battles alone. But today I have discovered something—more than the trick of ganging up on the demons. Much more. And I think my people have at last found it, too."

The automatic relay tape began to tap through the machine, and the big tubes were lighted. Dick jumped to it, and then saw that it was his message going over. The power of eighty or more demons was behind it; it was their first repayment for all the power they had stolen. It was enough for the moment.

"Violence," Johnny said through Pete's voice. "We hated violence because it was evil. But today I heard Dick cry out in violence, because his wish to be good was violent. And I knew that was why you are a great people. You are violent when you are wrong, and you do wrong things a great deal. But you are violent when you are right, and then you do great things. You deny blood sacrifice, Dick, but you give it with no politeness. Only with a violent rage that we dare question your right to give it."

He paused. Then he pointed outward. "Long ago, Dick, the silicone beasts tried to enslave this world. We were quiet and not too unkind. We removed the strength in certain cells of their body, until they were not quite intelligent. And we left them to menace others with the evil that remained in them, as they endangered you today. Less long ago, but too long, we refused to hurt a very dangerous, very stupid, and completely insane group of our children—children who were mutated into something strange. And you have been threatened by these demons, as we have been nearly killed off by them. We were never violent; we did the least we could. We came to give you half of our energies, because it might be enough. And you tried to give us all you had, because you could never do less than enough. You're a very violent race, you men. But if we can find peace with you, and work with you, perhaps we can learn to be violent when right, also."

He snapped out of the robot, and out through the dome, and his people began to form up around him.

“Quite a talker,” Charlie said, when Dick sat without speaking. “Yep. Almost gets violent about his eloquence, don’t he? Dick, you’d better answer the message that’s coming in, before they get violent over there at East Twilight.”

An hour later the big rocket began dropping down to a landing in front of Sigma dome. The lights were low in the dome, but the air-cooling pumps were still working, burning up the last dregs of fuel, but still bravely fighting the storm.

Dick slipped out with Charlie and Pete, just before the new supply of fuel was being received. East Twilight had promised not to tell the whole story until he had seen his family, and they kept their word, more or less. There were only a few of the people of Sigma who had heard it before he started down the street.

But he knew it would have to be told, and that it would be rough, being a hero, for a while, until new things came up to fill their minds. Besides, according to the letter he was carrying from the governor of Mercury, he’d be going back to Earth soon, to the university where his father had graduated . . . and both his grandfathers . . . and where he could find himself just a man who had to bone up to pass his tests.

It was enough to know that the wispies and men would be working together from now on, without his having to stand around being a hero to both of them.

By the time he got back, he’d be just another engineer, if he was lucky. And that was all he’d ever wanted to be.